PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
ARP2762

COMPACT DISC PLAYER

PD-77 HEM, SL

- **Refer to the service manual ARP2298 for PD–75/HEM.**
- This manual is applicable to PD–77/HEM and SL.

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1. CONTRAST OF MISCELLANEOUS PARTS

NOTES:

- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- Parts marked by "⊙" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω → 56×10^1 → 561 ································ RD1/8PM$\boxed{5}\boxed{6}\boxed{1}$J
47k Ω → 47×10^3 → 473 ································ RD1/4PS$\boxed{4}\boxed{7}\boxed{3}$J
0.5 Ω → 0R5 ·· RN2H$\boxed{0}\boxed{R}\boxed{5}$K
1 Ω → 010 ·· RS1P$\boxed{0}\boxed{1}\boxed{0}$K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62k Ω → 562×10^1 → 5621 ································ RN1/4PC$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F

PD-77/HEM, SL and PD-75/HEM have the same construction except for the following:

Mark	Symbol & Description	Part No.			Remarks
		PD-75/HEM	PD-77/HEM	PD-77/SL	
⊙	MAIN BOARD assembly	PWZ1994	······	······	
	MAIN BOARD assembly	······	PWZ2631	PWZ2631	
NSP	PRIMARY BOARD assembly	PWZ1988	······	······	
	PRIMARY BOARD assembly	······	PWZ1989	PWZ1989	
⊙	ANALOG BOARD assembly	PWM1364	······	······	
	ANALOG BOARD assembly	······	PWM1804	PWM1804	
⚠	Power transformer (T1 : 17VA)	PTT1163	PTT1163	PTT1164	
⚠	Power transformer (T2 : 8VA)	PTT1167	PTT1167	PTT1168	
⚠	Voltage selector (AC110/120 – 127/220/240V)	······	······	PSB1002	No.1
	Digital button	PAC1530	PAC1649	PAC1649	
	Power button	PAC1539	PAC1650	PAC1650	
	Function button	PAC1609	PAC1619	PAC1619	
	Top panel	PAN1123	······	······	
NSP	Front panel	PAN1219	······	······	
	Front panel	······	PAN1270	PAN1270	
	Front panel assembly	PEA1178	······	······	
	Side sash	PAN1220	······	······	
	SH screw	PBA1033	······	······	
	Screw	PBA1038	······	······	
	Bonnet	PYY1071	PEA1123	PEA1123	
	Side rubber	······	PEB1239	PEB1239	No.2
	Side spacer	······	PEB1240	PEB1240	No.3
	Side board (L)	PMM1039	······	······	
	Side board (R)	PMM1040	······	······	
	Side sheet A	······	PNM1222	PNM1222	No.4
	Wood collar	PNW1238	······	······	
	Function panel	PNW2065	PNW2252	PNW2252	
	Panel stabilizer	······	PNW2253	PNW2253	No.5
	Tray plate assembly	PXA1395	PXA1486	PXA1486	
	Collar	······	RAT1002	RAT1002	No.6
	Screw	······	VBA1027	VBA1027	No.7

Mark	Symbol & Description	Part No.			Remarks
		PD-75/HEM	PD-77/HEM	PD-77/SL	
	Name plate	AAM1001	······	······	
	Badge	······	RAN1011	RAN1011	
NSP	Cushion (2)	······	PEB1251	PEB1251	No.8
NSP	Wood spacer	PEC1001	······	······	
NSP	Spacer	PNM1145	······	······	
NSP	Rear base	PNA1542	PNA1917	PNA1916	
NSP	Rapping cover	······	······	REB1069	No.9
NSP	Lens holder	······	PEB1200	PEB1200	No.10
NSP	Spacer	······	PNM1135	PNM1135	No.11
NSP	Shield plate	······	PNM1228	PNM1228	No.12
	CD packing case	PHG1733	PHG1870	PHG1870	
	Protector (F)	PHA1171	PHA1226	PHA1226	
	Protector (R)	PHA1172	PHA1227	PHA1227	
	Remote control unit	PWW1057	PWW1056	PWW1056	
	Operating instructions (English/French)	PRE1149	PRE1172	PRE1172	
	Operating instructions (German/Italian/ Dutch/Swedish/Spanish/Portuguese)	PRF1048	PRF1060	······	

Note: Refer to the exploded views for the remarks No.1 to No.12.

MAIN BOARD ASSEMBLY
PWZ2631 and PWZ1994 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		PWZ1994	PWZ2631	
	L3	LRA010K	LFA010K	
	L701, L702	LAUR22K	LAU010K	
	C70 – C73	CFTXA103J50	······	
	C115	CKCYF103Z50	CCCCH101J50	
	C164	CKCYF103Z50	······	
	C704	CCCSL100D50	······	
	R125	······	RD1/6PM473J	
	C199	······	CKDYF103Z50	

PRIMARY BOARD ASSEMBLY
PWZ1989 and PWZ1988 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		PWZ1988	PWZ1989	
	L311	PTL1002	······	
	C311	VCG – 048	RCG – 009	
	C312, C313	VCG – 048	······	

PCB PARTS LIST

Mark	No.	Description	Part No.
	ANALOG BOARD ASSEMBLY		
	SEMICONDUCTORS		
⚠	IC620, IC621		ICP-N15
	IC554, IC555, IC615		NJM5532DD
	IC501, IC502		NJM7805FA
	IC513		PD0116A
	IC522, IC523		PD2028B
	IC512		TC74HCU04AP
	Q625		2SA933S
	Q621, Q623		2SB715
⚠	Q617, Q622		2SB857
	Q626		2SC1740S
	Q554-Q557, Q562, Q563		2SC3068
⚠	Q619, Q624		2SD1133
	Q618, Q620		2SD755
	Q559, Q560		2SJ104
	Q558, Q561		2SK364
	Q522, Q523		DTA124ES
	Q521, Q524, Q525		DTC124ES
⚠	D610-D613, D620-D627		10DF2FA9
	D521, D550, D551, D570, D571		1SS292
⚠	D628-D631		HZ5CLL
	COILS		
	L511, L512, L522, L523, L525-L527		LAU010K
	L513, L514, L564		PTH1006
	L551-L554		VTH1013
	CAPACITORS		
	C517, C518, C538, C539		CCCCH120J50
	C540, C541		CCDCH101J50
	C505		CENA101M25
	C516, C519, C524, C528, C532, C535, C556, C557, C576, C577, C589, C593, C594, C597		CENA102M16
	C606, C607		CENA102M35
	C520		CEAS331M50
	C602, C603, C620, C621		CENA470M50
	C600, C601		CENA471M16
	C568-C571		CENA471M50
	C574, C575		CFTXA102J50
	C503, C504, C508, C511, C512, C515, C578, C579, C584, C585, C599, C608-C618, C624, C625		CFTXA103J50
	C501, C502, C506, C507, C526, C534, C554, C555, C558, C559, C581, C590, C595		CFTXA104J50
	C510, C514, C521, C546, C547, C586		CFTXA473J50
	C566, C567		CFTXA562J50
	C564, C565		CFTXA681J50
	C522, C530, C531, C591		CFTXA682J50
	C582, C583		CFTXA683J50
	C542, C543, C550, C551		CMA181J500
	C544, C545, C552, C553		CMA330J500
	C560-C563		CMA470J500

Part No.

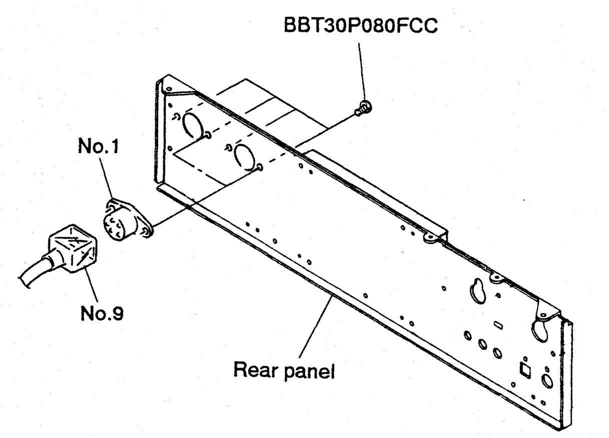
15
32DD
05FA
6A
8B
CU04AP
3S
5
7
40S
68
33
5
4
64
24ES
24ES
2FA9
92
LL
10K
006
013
H120J50
H101J50
101M25
102M16
102M35
331M50
470M50
471M16
471M50
A102J50
A103J50
A104J50
A473J50
A562J50
A681J50
A682J50
A683J50
181J500
330J500
470J500

Mark	No.	Description	Part No.
	C527, C529		CQMA473J50
	C587, C588	(C=220, V(AC)=35)	PCH1099
	C604, C605	(C=2200, V(AC)=35)	PCH1102
	C523	(C=0.01, V(DC)=50)	PCL1029
	C572, C573	(C=22, V(DC)=50)	VCH1091
RESISTORS			
	R502, R512-R514		RD1/4PM471J
	R571, R574		RDM1/2P105J
	R579, R581		RDM1/2P122J
	R576, R577	(1.6K)	RDM1/2P162J
	R570, R573	(220Ω)	RDM1/2P221J
	R582, R583		RDM1/2P223J
	R578, R580		RDM1/2P242J
	R588, R589		RDM1/2P101J
	R584, R585	(180Ω)	RDM1/2P181J
	R590, R591		RDM1/2P511J
	R568, R569	(750Ω)	RDM1/2P751J
	R651-R654	(4.7Ω)	RDR1/2PM4R7J
	R645, R646	(1.3kΩ)	RDR1/4PM132J
	R544, R545, R550, R551, R556-R559	(15K)	RDR1/4PM153J
	R564-R567	(18K)	RDR1/4PM183J
	R529	(22K)	RDR1/4PM223J
	R528, R530	(47K)	RDR1/4PM473J
	R659, R660	(5.1K)	RDR1/4PM512J
	R540-R543, R552-R555, R655, R656	(7.5K)	RDR1/4PM752J
	R546-R549, R560-R563	(8.2K)	RDR1/4PM822J
	R657, R658	(9.1K)	RDR1/4PM912J
	R647, R648		RN1/4PQ3001F
	R649, R650		RN1/4PQ4301F
	R505, R522, R524	(10K)	RS1LMF103J
	OTHER RESISTORS		RD1/6PM□□□J
OTHERS			
	CN501	CONNECTOR (10P)	KPC10
	X512	CRYSTAL RESONATOR (16.9344MHz)	PSS1011
	JA551	PIN JACK (1P)	RKB1010
	JA552	PIN JACK (1P)	RKB1011
		SCREW	IBZ30P100FCC

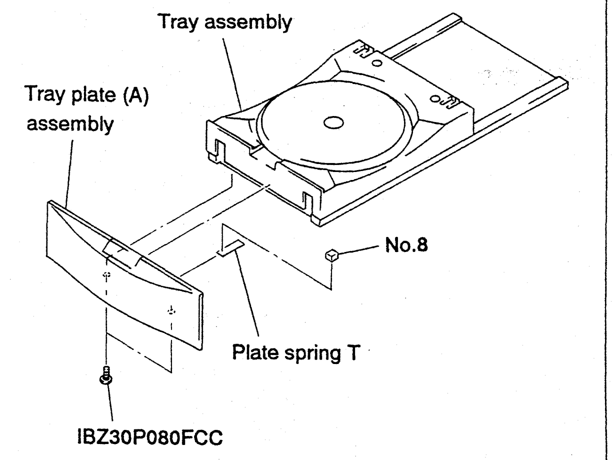
PD-77

● EXPLODED VIEWS

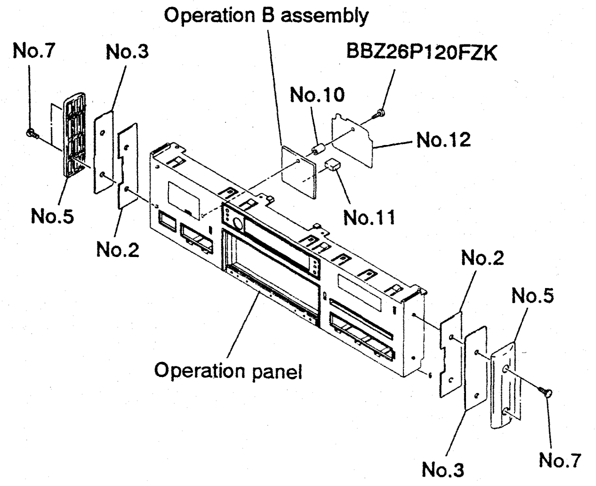
• Rear Panel Section (PD-77/SL only)



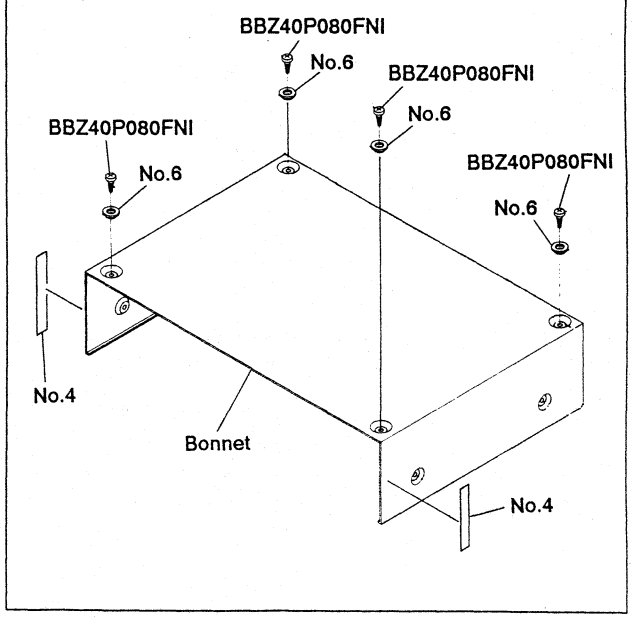
• Tray Section



• Operation Panel Section



• Bonnet Case Section



NOTE FOR SCHEMATIC DIAGRAMS

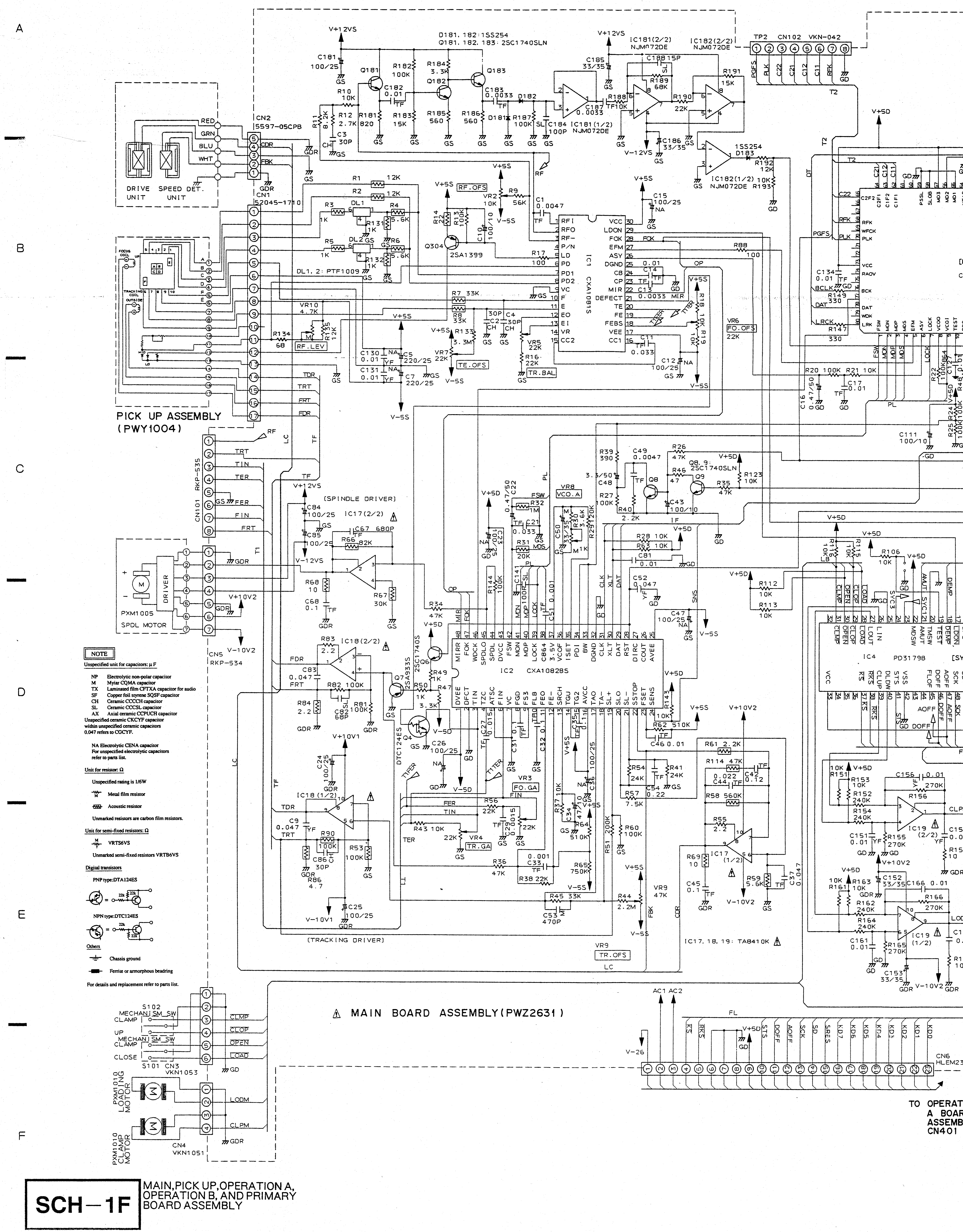
(Type 4)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ☐ : DC voltage (V) in PLAY mode unless otherwise noted.
   ⇔ mA or – mA: DC current in PLAY mode unless otherwise noted.
   Value in ( ) is DC current in STOP mode.
7. **OTHERS:**
   - ➜ : Signal route.
   - ⊘ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):
   OPERATION A BOARD ASSEMBLY
   S401 : ▶▶| ┐ TRACK SEARCH
   S402 : |◀◀ ┘
   S403 : PAUSE (II)
   S404 : PLAY (▶)
   S405 : OPEN/CLOSE (▲)
   S406 : STOP (■)

   OPERATION B BOARD ASSEMBLY
   S407 : DISPLAY OFF
   S408 : OUTPUT
9. **SCH–□ ON THE SCHEMATIC DIAGRAM:**
   - SCH–□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)

2. SCHEMATIC AND PCB DIAGRAMS

1. MAIN, PICK UP, OPERATION A, OPERATION B AND PRIMARY BOARD ASSEMBLIES


DRIVE UNIT
SPEED DET. UNIT
PICK UP ASSEMBLY (PWY1004)
PXM1005 SPDL MOTOR
DRIVER
CN2 5597-05CPB
CN1 52045-1710
CN101 RKP-535
CN5 RKP-534
CN102 VKN-042
TP2
IC1 CXA1081S
IC2 CXA1082BS
IC4 PD3179B
IC17(2/2) (SPINDLE DRIVER)
IC18(1/2) (TRACKING DRIVER)
IC18(2/2)
IC17(1/2)
IC181(1/2) NJM072DE
IC181(2/2) NJM072DE
IC182(1/2) NJM072DE
IC182(2/2) NJM072DE
IC19(1/2)
IC19(2/2)
D181, 182: 1SS254
Q181, 182, 183: 2SC1740SLN
DL1, 2: PTF1009
Q304 2SA1399
Q6 2SC1740S
Q7 2SA933S
Q4 DTC124ES
Q8, 9: 2SC1740SLN
IC17, 18, 19: TA8410K
RF.LEV
RF.OFS
TE.OFS
TR.BAL
FO.OFS
VCO.A
FO.GA
TR.GA
TR.OFS
S102 MECHANISM_SW CLAMP UP
S101 MECHANISM_SW CLAMP CLOSE
CN3 VKN1053
PXM1010 LOADING MOTOR
PXM1010 CLAMP MOTOR
CN4 VKN1051
CN6 HLEM23
MAIN BOARD ASSEMBLY (PWZ2631)
TO OPERAT A BOAR ASSEMB CN401

NOTE

Unspecified unit for capacitors: µ F

NP	Electrolytic non-polar capacitor
M	Myiar CQMA capacitor
TX	Laminated film CFTXA capacitor for audio
SF	Copper foil styrene SQSF capacitor
CH	Ceramic CCCCH capacitor
SL	Ceramic CCCSL capacitor
AX	Axial ceramic CCPUCH capacitor

Unspecified ceramic CKCYF capacitor within unspecified ceramic capacitors 0.047 refers to CGCYF.

NA Electrolytic CENA capacitor For unspecified electrolytic capacitors refer to parts list.

Unit for resistor: Ω

Unspecified rating is 1/6W

Metal film resistor

Acoustic resistor

Unmarked resistors are carbon film resistors.

Unit for semi-fixed resistors: Ω

VRTS6VS

Unmarked semi-fixed resistors VRTB6VS

Digital transistors

PNP type:DTA124ES

NPN type:DTC124ES

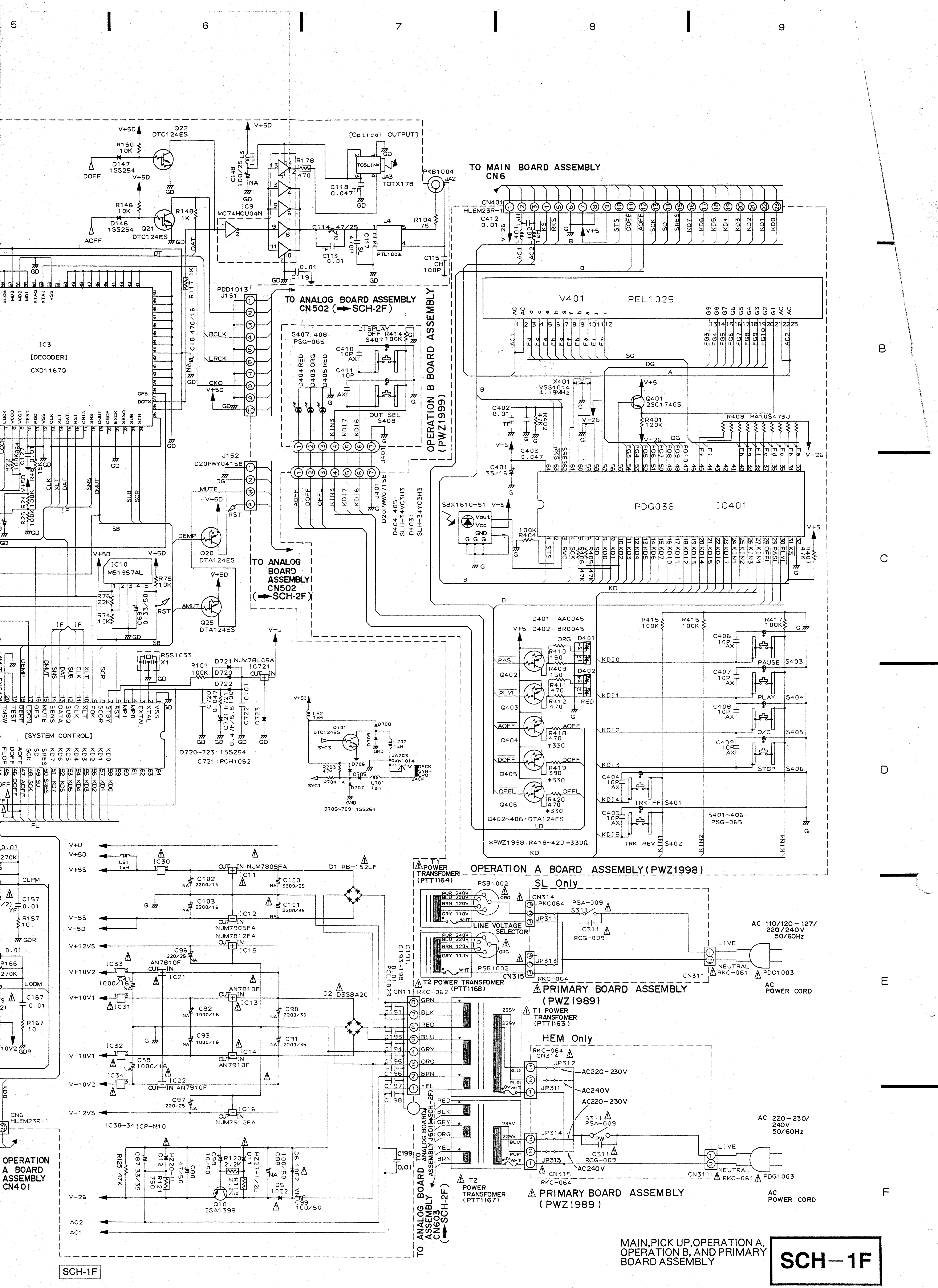
Others

Chassis ground

Ferrite or armorphous beadring

For details and replacement refer to parts list.

SCH−1F MAIN, PICK UP, OPERATION A, OPERATION B, AND PRIMARY BOARD ASSEMBLY

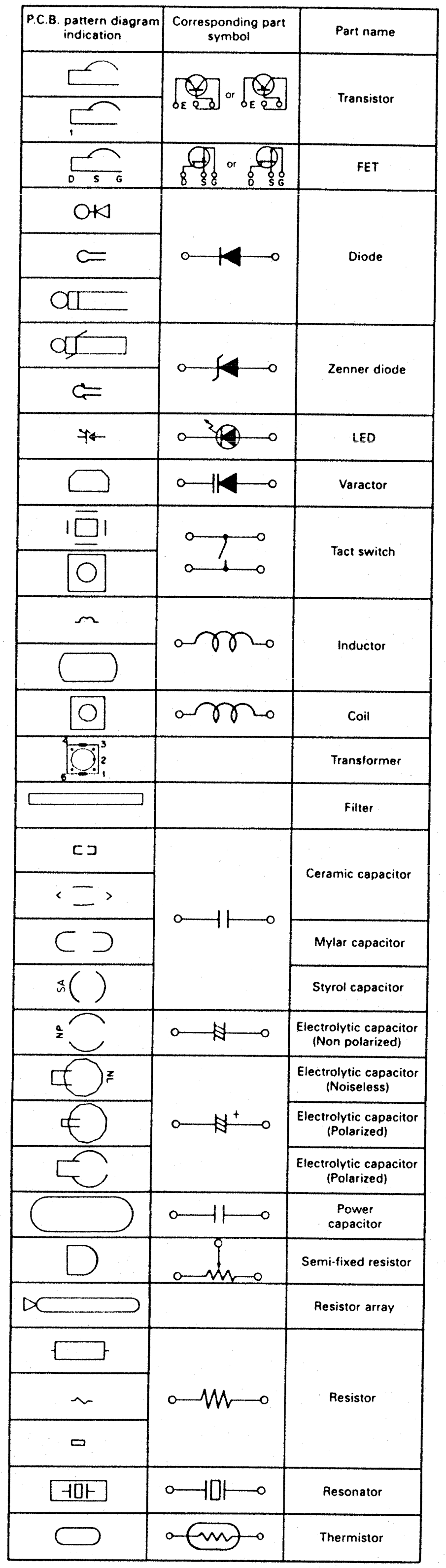

IC3 [DECODER] CXD1167Q
[SYSTEM CONTROL]
TO MAIN BOARD ASSEMBLY CN6
TO ANALOG BOARD ASSEMBLY CN502 (→SCH-2F)
TO ANALOG BOARD ASSEMBLY CN502 (→SCH-2F)
TO ANALOG BOARD ASSEMBLY CN603 (→SCH-2F)
TO ANALOG BOARD ASSEMBLY J601→SCH-2F
[Optical OUTPUT]
TOSLINK JA3 TOTX178
PKB1004 JA2
MC74HCU04N IC9
IC10 M51957AL
OPERATION B BOARD ASSEMBLY (PWZ1999)
DISPLAY OFF S407
OUT SEL S408
D404 RED
D403 ORG
D405 RED
D404, 405: SLH-34VC3H3
D403: SLH-34YC3H3
S407, 408: PSG-065
J151 PDD1013
J152 D20PWY0415E
J401 D20PWY0715E
V401 PEL1025
IC401 PDG036
Q401 2SC1740S
X401 VSS1014 4.19MHz
SBX1610-51
D401 AA0045
D402 BR0045
Q402~406: DTA124ES
*PWZ1998: R418~420=330Ω
PAUSE S403
PLAY S404
O/C S405
STOP S406
TRK FF S401
TRK REV S402
S401~406: PSG-065
OPERATION A BOARD ASSEMBLY (PWZ1998)
SL Only
HEM Only
LINE VOLTAGE SELECTOR
T1 POWER TRANSFOMER (PTT1164)
T2 POWER TRANSFOMER (PTT1168)
T1 POWER TRANSFOMER (PTT1163)
T2 POWER TRANSFOMER (PTT1167)
PRIMARY BOARD ASSEMBLY (PWZ1989)
PRIMARY BOARD ASSEMBLY (PWZ1989)
AC 110/120-127/ 220/240V 50/60Hz
AC 220-230/ 240V 50/60Hz
AC POWER CORD PDG1003
RKC-061 NEUTRAL LIVE
D1 RB-152LF
D2 D3SBA20
IC11 NJM7805FA
IC12 NJM7905FA
IC15 NJM7812FA
IC21 AN7810F
IC13 AN7810F
IC14 AN7910F
IC22 AN7910F
IC16 NJM7912FA
IC30~34 ICP-N10
Q10 2SA1399
IC721 NJM78L05A
D720~723: 1SS254
C721: PCH1062
D705~709: 1SS254
Q701 DTC124ES
Q20 DTA124ES
Q25 DTA124ES
Q21 DTC124ES
Q22 DTC124ES
OPERATION A BOARD ASSEMBLY CN401
CN6 HLEM23R-1
CN401 HLEM23R-1

MAIN,PICK UP,OPERATION A,
OPERATION B, AND PRIMARY
BOARD ASSEMBLY

SCH−1F

SCH-1F

- **View from component side**

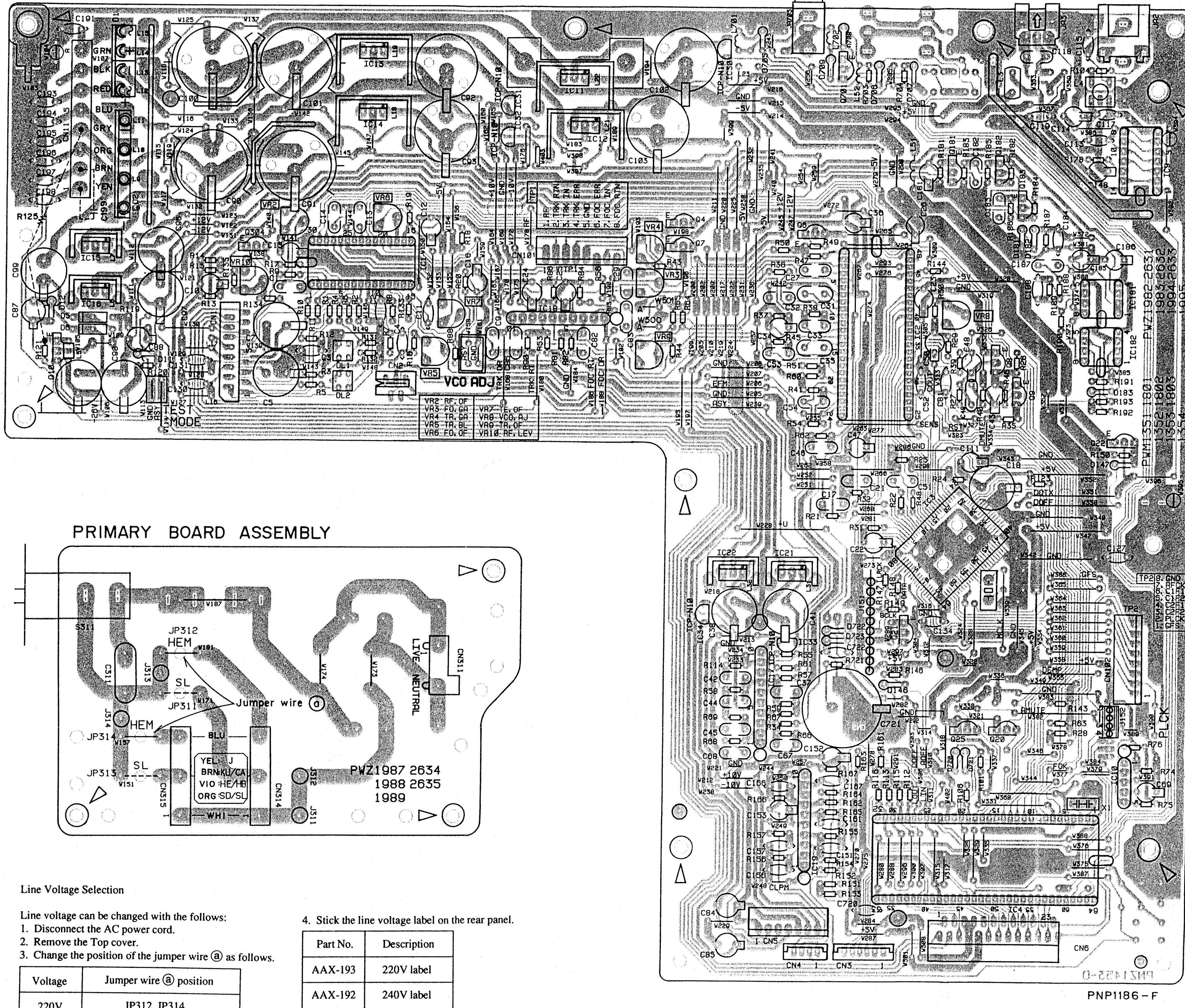


P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor
		FET
		Diode
		Zenner diode
		LED
		Varactor
		Tact switch
		Inductor
		Coil
		Transformer
		Filter
		Ceramic capacitor
		Mylar capacitor
		Styrol capacitor
		Electrolytic capacitor (Non polarized)
		Electrolytic capacitor (Noiseless)
		Electrolytic capacitor (Polarized)
		Electrolytic capacitor (Polarized)
		Power capacitor
		Semi-fixed resistor
		Resistor array
		Resistor
		Resonator
		Thermistor

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

MAIN BOARD ASSEMBLY

PRIMARY BOARD ASSEMBLY


VCO ADJ
VR2 RF.OF
VR3 FO.GA
VR4 TR.GA
VR5 TR.BL
VR6 FO.OF
VR7 TE.OF
VR8 VCO.AJ
VR9 TR.OF
VR10 RF.LEV
TEST MODE
PWM1351 1801
PWZ1982 2631
PNP1186-F
LIVE
NEUTRAL
Jumper wire ⓐ
HEM
SL
JP311
JP312
JP313
JP314
YEL: J
BRN: KU/CA
VIO: HE/HB
ORG: SD/SL
BLU
WHI
PWZ1987 2634
1988 2635
1989

IC13 IC30
IC11 Q701
IC31
IC14
IC12
IC32
IC9
Q181
Q182
Q183
VR2 Q4
VR6 Q7 Q6
VR4 Q304
IC15
VR10 IC1
VR3 IC16 IC181
VR7 IC18
VR8 IC2
IC182
VR5 Q10
VR9
Q8
Q9
Q22
IC3
IC22
IC21
IC34
IC33 Q21
IC17
Q25 Q20
IC10
IC19
IC4

Line Voltage Selection

Line voltage can be changed with the follows:
1. Disconnect the AC power cord.
2. Remove the Top cover.
3. Change the position of the jumper wire ⓐ as follows.

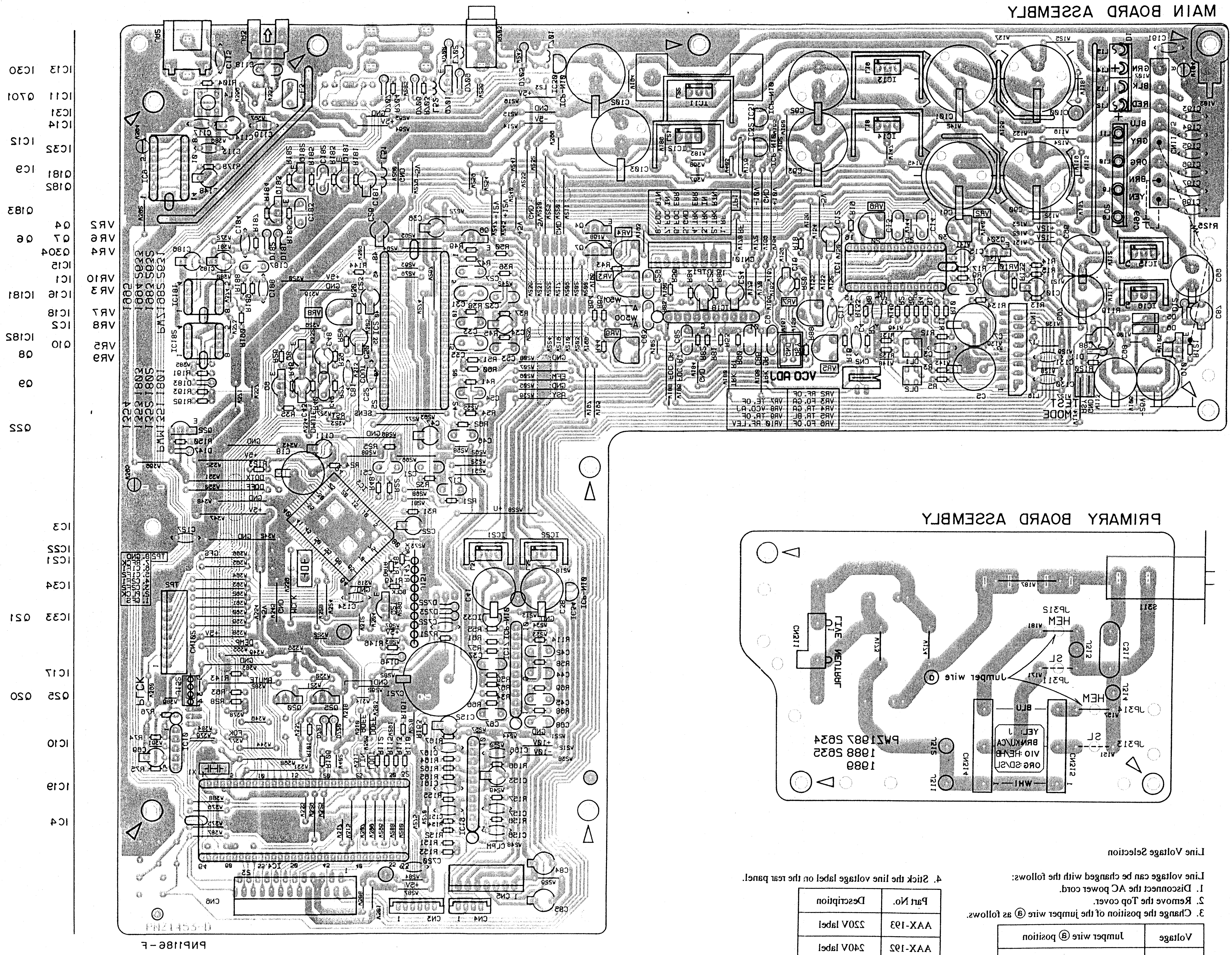
Voltage	Jumper wire ⓐ position
220V	JP312, JP314
240V	JP311, JP313

4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

- View from soldering side

MAIN BOARD ASSEMBLY


PNP1186-F
VCO ADJ
TEST MODE
6
5
4
3
2
1
A
B
C
D

PRIMARY BOARD ASSEMBLY

PWZ1987 2634
1988 2635
1989
Jumper wire ⓐ
HEM
SL
NEUTRAL
BLU
WHI

Line Voltage Selection

Line voltage can be changed with the follows:
1. Disconnect the AC power cord.
2. Remove the Top cover.
3. Change the position of the jumper wire ⓐ as follows.

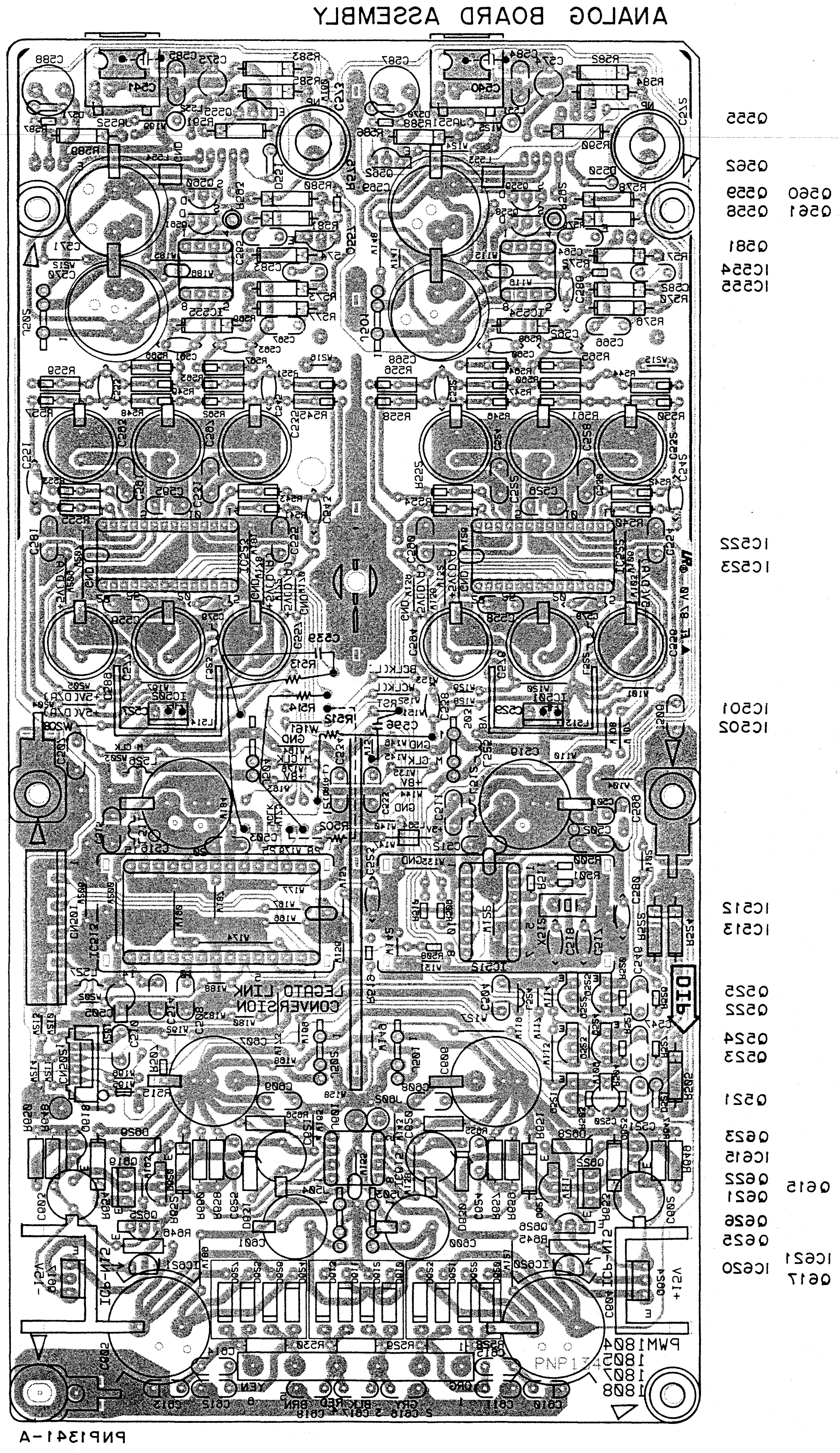
Voltage	Jumper wire ⓐ position
220V	JP312, JP314
240V	JP311, JP313

4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

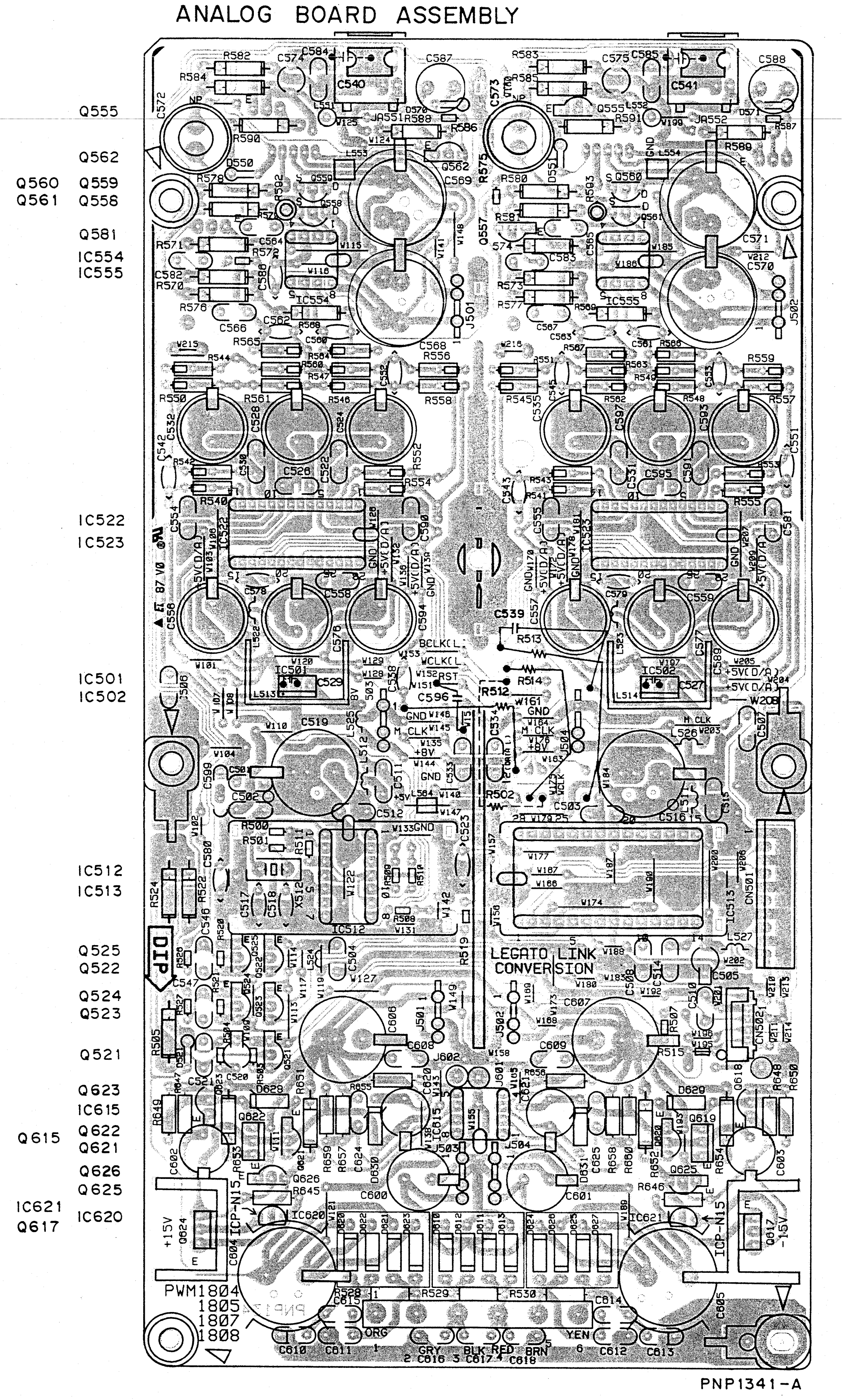
2. ANALOG BOARD ASSEMBLY

- **View from soldering side**


ANALOG BOARD ASSEMBLY
A
B
C
D
Q555
Q562
Q560 Q559
Q561 Q558
Q581
IC554
IC555
IC522
IC523
IC501
IC502
IC512
IC513
Q525
Q522
Q524
Q523
Q521
Q623
IC615
Q622
Q621
Q615
Q626
Q625
IC621
IC620
Q617
LEGATO LINK CONVERSION
PWM1804
1805
1807
1808
PNP1341-A

2. ANALOG BOARD ASSEMBLY

• **View from component side**

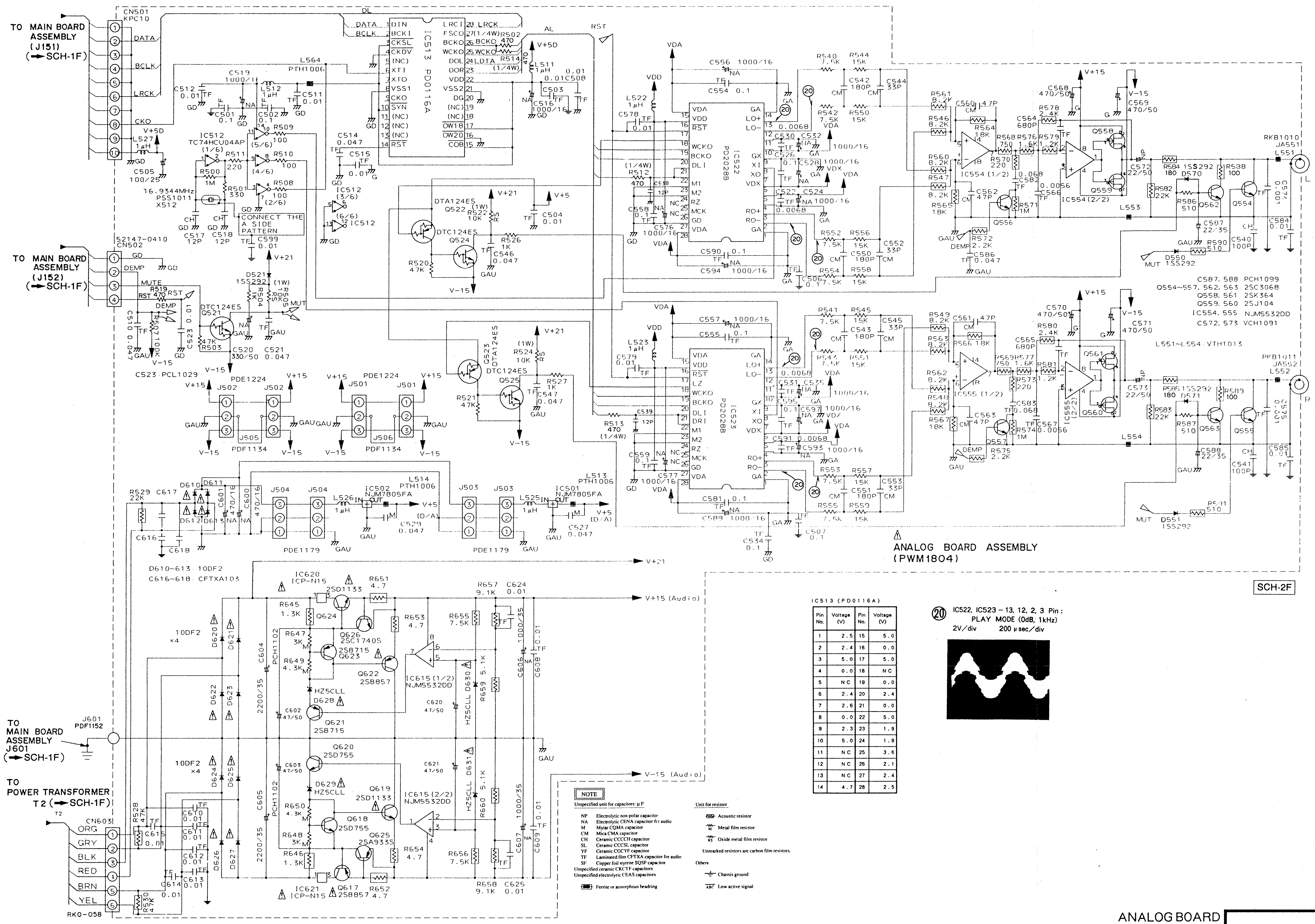

ANALOG BOARD ASSEMBLY
Q555
Q562
Q560
Q559
Q561
Q558
Q581
IC554
IC555
IC522
IC523
IC501
IC502
IC512
IC513
Q525
Q522
Q524
Q523
Q521
Q623
IC615
Q615
Q622
Q621
Q626
Q625
IC621
IC620
Q617
C540
C541
C569
C571
C570
IC522
IC523
IC501
IC502
IC512
IC513
IC555
IC554
C539
BCLK(L)
WCLK(L)
RST
GND
M CLK
+8V
+5V(D/A)
LEGATO LINK
CONVERSION
CN501
CN502
J501
J502
J503
J504
ICP-N15
+15V
-15V
PWM1804
1805
1807
1808
ORG
GRY
BLK
RED
BRN
YEN
C610
C611
C612
C613
C614
C615
C616
C617
C618
R529
R530
DIP
87 V0
PNP1341-A

A

B

C

D


TO MAIN BOARD ASSEMBLY (J151) (→SCH-1F)
CN501 KPC10
DATA
BCLK
LRCK
CKO
IC513 PD0116A
IC512 TC74HCU04AP
16.9344MHz PSS1011 X512
CONNECT THE A SIDE PATTERN
TO MAIN BOARD ASSEMBLY (J152) (→SCH-1F)
52147-0410 CN502
DTA124ES Q522
DTC124ES Q524
DTC124ES Q521
DTA124ES Q523
DTC124ES Q525
IC522 PD2028B
IC523 PD2028B
IC554 (1/2)
IC554 (2/2)
IC555 (1/2)
IC555 (2/2)
RKB1010 JA551
RKB1011 JA552
C587, 588 PCH1099
Q554~557, 562, 563 2SC3068
Q558, 561 2SK364
Q559, 560 2SJ104
IC554, 555 NJM5532DD
C572, 573 VCH1091
L551~L554 VTH1013
C523 PCL1029
J502 J501 PDE1224
J505 J506 PDF1134
J504 J503 PDE1179
IC502 NJM7805FA
IC501 NJM7805FA
L514 PTH1006
L513 PTH1006
D610~613 10DF2
C616~618 CFTXA103
IC620 ICP-N15
IC621 ICP-N15
Q624 2SD1133
Q626 2SC1740S
Q623 2SB715
Q622 2SB857
Q621 2SB715
Q620 2SD755
Q619 2SD1133
Q618 2SD755
Q625 2SA933S
Q617 2SB857
IC615 (1/2) NJM5532DD
IC615 (2/2) NJM5532DD
V+15 (Audio)
V−15 (Audio)
V+21
TO MAIN BOARD ASSEMBLY J601 (→SCH-1F)
J601 PDF1152
TO POWER TRANSFORMER T2 (→SCH-1F)
CN603
ORG
GRY
BLK
RED
BRN
YEL
RKO-058
SCH-2F

ANALOG BOARD ASSEMBLY
(PWM1804)

IC513 (PD0116A)

Pin No.	Voltage (V)	Pin No.	Voltage (V)
1	2.5	15	5.0
2	2.4	16	0.0
3	5.0	17	5.0
4	0.0	18	NC
5	NC	19	0.0
6	2.4	20	2.4
7	2.6	21	0.0
8	0.0	22	5.0
9	2.3	23	1.9
10	5.0	24	1.9
11	NC	25	3.6
12	NC	26	2.1
13	NC	27	2.4
14	4.7	28	2.5

⑳ IC522, IC523 – 13, 12, 2, 3 Pin :
PLAY MODE (0dB, 1kHz)
2V/div 200 μsec/div

NOTE

Unspecified unit for capacitors: μF

NP	Electrolytic non-polar capacitor
NA	Electrolytic CENA capacitor for audio
M	Myiar CQMA capacitor
CM	Mica CMA capacitor
CH	Ceramic CCCCH capacitor
SL	Ceramic CCCSL capacitor
YF	Ceramic CGCYF capacitor
TF	Laminated film CFTXA capacitor for audio
SF	Copper foil styrene SQSF capacitor

Unspecified ceramic CKCYF capacitors
Unspecified electrolyric CEAS capacitors

Ferrite or amorphous beadring

Unit for resistor

Acoustic resistor
M Metal film resistor
RS Oxide metal film resistor

Unmarked resistors are carbon film resistors.

Others

Chassis ground
ABC Low active signal

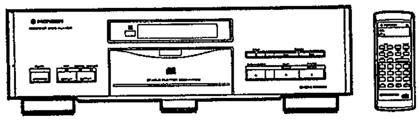
SCH–2F
ANALOG BOARD ASSEMBLY

ANALOG BOARD ASSEMBLY
SCH–2F

PIONEER®
The Art of Entertainment

PION-03376

Service Manual



ORDER NO.
ARP2298

COMPACT DISC PLAYER

PD-75

PD-75 HAS THE FOLLOWING :

Type	Power Requirement	Remarks
KU/CA	AC 120 V only	
HEM	AC 220 V-230 V, AC 230-240 V(switchable)*	
SD	AC 110 V, 120 V-127 V, 220 V, 240 V(switchable)	

* Change the connection of the power transformer's primary wiring.

- **This manual is applicable to PD-75/KU/CA, HEM and SD types.**
- **As to the HEM and SD types, refer to page 87.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

CONTENTS

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2. EXPLODED VIEWS AND PARTS LIST 4
3. PACKING 13
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7. IC INFORMATION 84
8. FOR HEM AND SD TYPES 87
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10. SPECIFICATIONS 91

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PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
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PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
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FI JUNE 1991

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING .
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

1. SAFETY INFORMATION

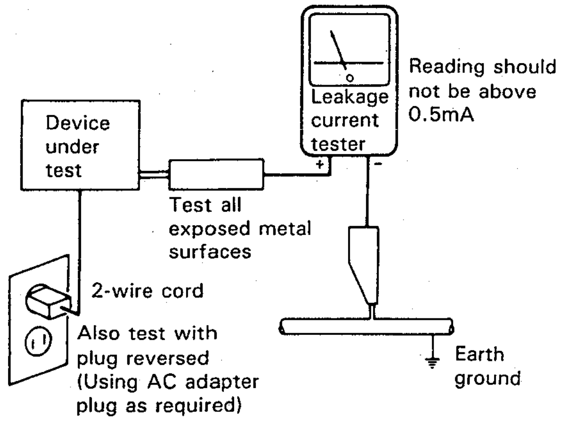
(FOR USA MODEL ONLY)

1.SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
+
-
Test all exposed metal surfaces
2-wire cord
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2.PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn
varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

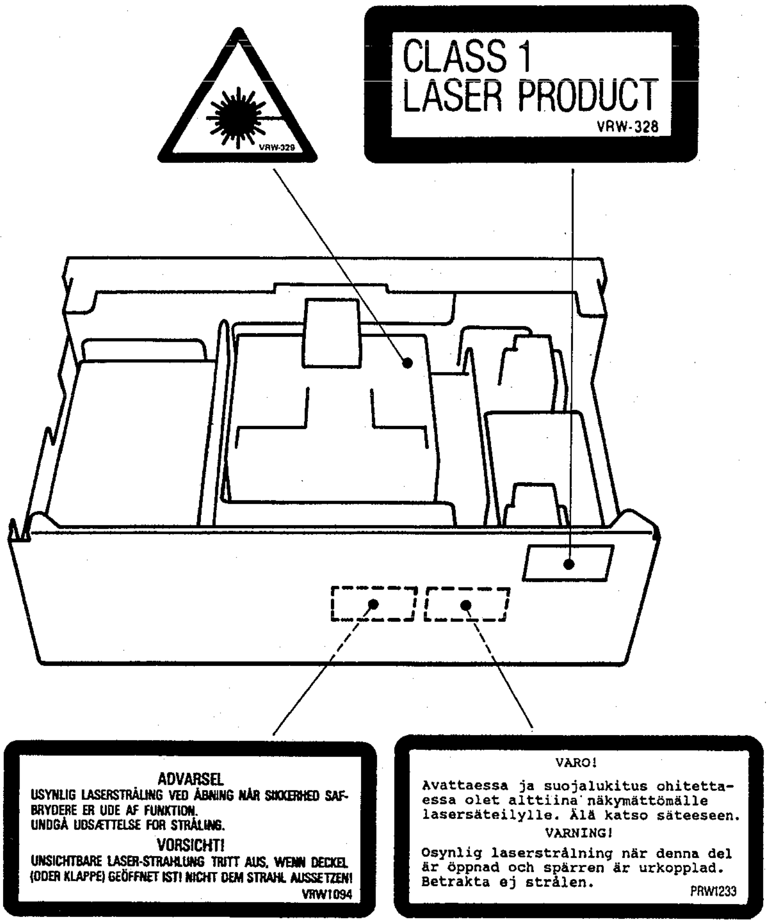
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF HIGHER CLASS THAN 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for
laser radiation

LABEL CHECK

HEM type



ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094

VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.
PRW1233

HEM type

Additional Laser Caution

1. Laser Interlock mechanism
   The ON/OFF status of the clamp switch (S 102) for detecting loading completion is detected by the system microprocessor, and the design prevents laser diode oscillation when the clamp switch is OFF.
   Thus, the interlock will no longer function if the clamp switch (S 102) is deliberately shorted.
   In the test mode the interlock mechanism will not function (refer to page 39).
   Laser diode oscillation will continue if pin 4, 5, or 29 of CXA 1081 S(IC 1) is connected to ground or the terminals of Q 304 are shorted each other (fault condition).

2. If the fault condition described in 1 is induced with the cover removed and the objective lens extending past the outer circumference of the disc clamper diameter, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 or higher laser beam.

2. EXPLODED VIEWS AND PARTS LIST

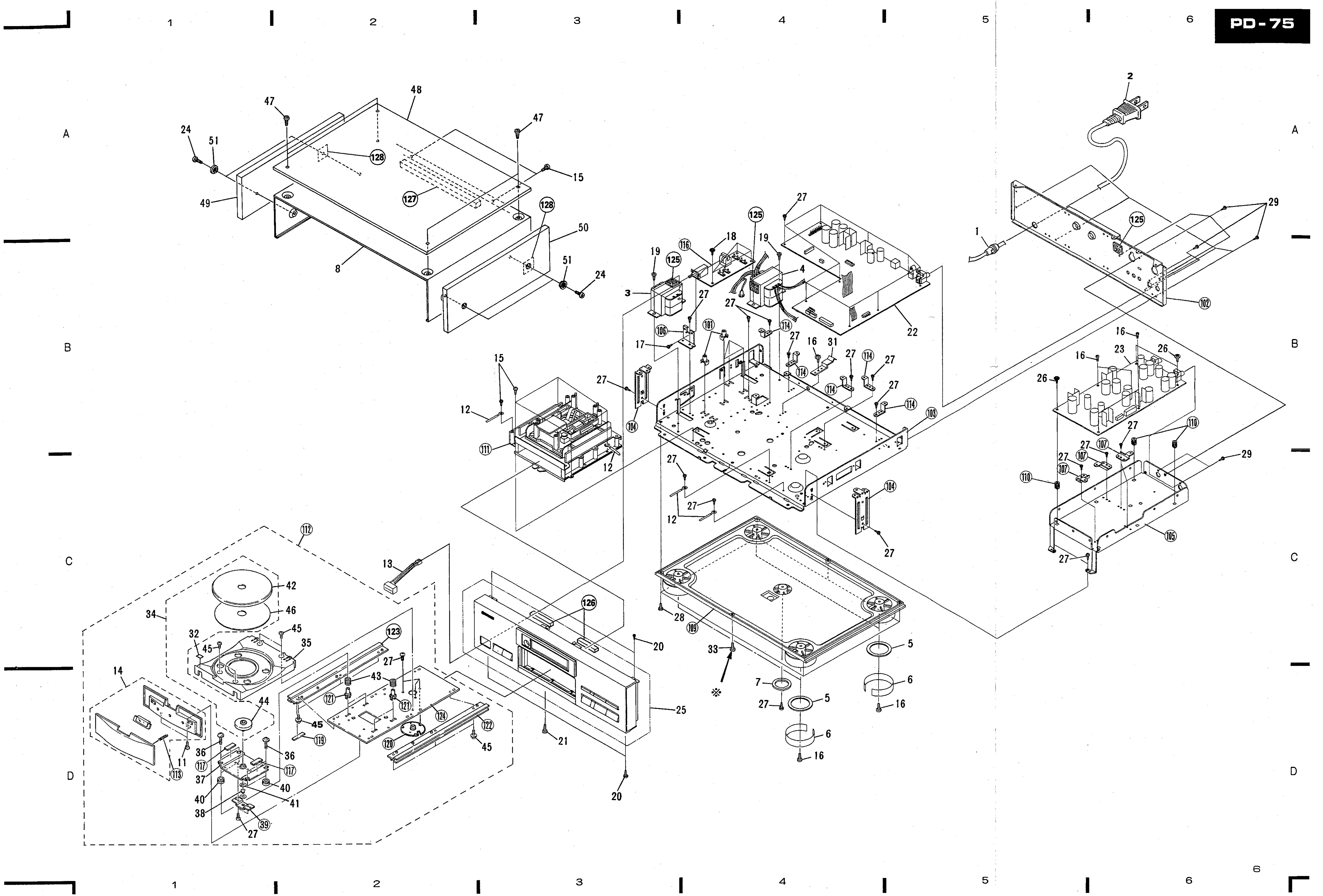
NOTES :

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

2.1 EXTERIOR

Parts List of Exterior

Mark	No.	Description	Parts No.
	1	Strain relief	CM-22C
⚠	2	AC power cord	PDG1015
⚠	3	Power transformer (16VA)	PTT1166
⚠	4	Power transformer (17VA)	PTT1162
	5	Stopper	PNM1095
	6	Tape	PNM1099
	7	Stopper	PNM1107
	8	Bonnet	PEA1168
	9	· · · · ·	
	10	· · · · ·	
	11	Screw	IBZ30P060FCC
	12	Cord clamper	RNH-184
	13	Power button	PAC1539
	14	Tray plate (A) assembly	PXA1395
	15	Screw	BBZ30P080FCC
	16	Screw	IBZ30P060FCC
	17	Screw	PMZ30P060FCU
	18	Screw	IBZ30P180FMC
	19	Screw	BBZ40P060FCC
	20	Screw	BBT30P080FCC
	21	Screw	PDZ30P050FCC
◉	22	MAIN BOARD assembly	PWZ1983
◉	23	ANALOG BOARD assembly	PWM1364
	24	Screw	PBA1038
	25	Front panel assembly	PEA1177
	26	Screw	IBZ30P150FCU
	27	Screw	IBZ30P060FCC
	28	Screw	BBZ30P140FCC
	29	Screw	BBZ30P080FCC
	30	· · · · ·	
	31	Ground plate	PBK1090
	32	Caution label	PRW1244
	33	Screw	BBZ30P160FZK
	34	Turntable assembly	PEA1159
	35	Over tray	PNW1871
	36	Floating screw	PBA1064
	37	Spindle base assembly	PXA1405
	38	Receptacle	VNL-268
	39	Stopper	
	40	Damper rubber	PEB1146
	41	E-ring	YE30FUC
	42	Turntable	PAN1203
	43	Floating spring	PBH1092
	44	Rotor assembly	PXA1392
	45	Screw	BBZ30P060FCC
	46	TT sheet	PNM1125
	47	SH screw	PBA1033
	48	Top panel	PAN1123
	49	Side board (L)	PMM1039
	50	Side board (R)	PMM1040
	51	Wood collar	PNW1238
	101	PCB mould	
	102	Rear base	
	103	Under base	
	104	Side angle	
	105	Shield plate	
	106	Switch angle	
	107	Angle (B)	
	108	· · · · ·	
	109	Base	
	110	PCB spacer	
	111	Single mechanism assembly	
	112	Tray assembly	
	113	Plate spring	
	114	Board angle	
	115	· · · · ·	
	116	PRIMARY BOARD assembly	
	117	Stopper rubber	
	118	· · · · ·	
	119	Stopper tape	
	120	Tray locker	
	121	Collar	
	122	Slide guide	
	123	Rack	
	124	Tray	
	125	Binder holder	
	126	Spacer	
	127	Bonnet spacer	
	128	Wood spacer	


A
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(126)
(109)
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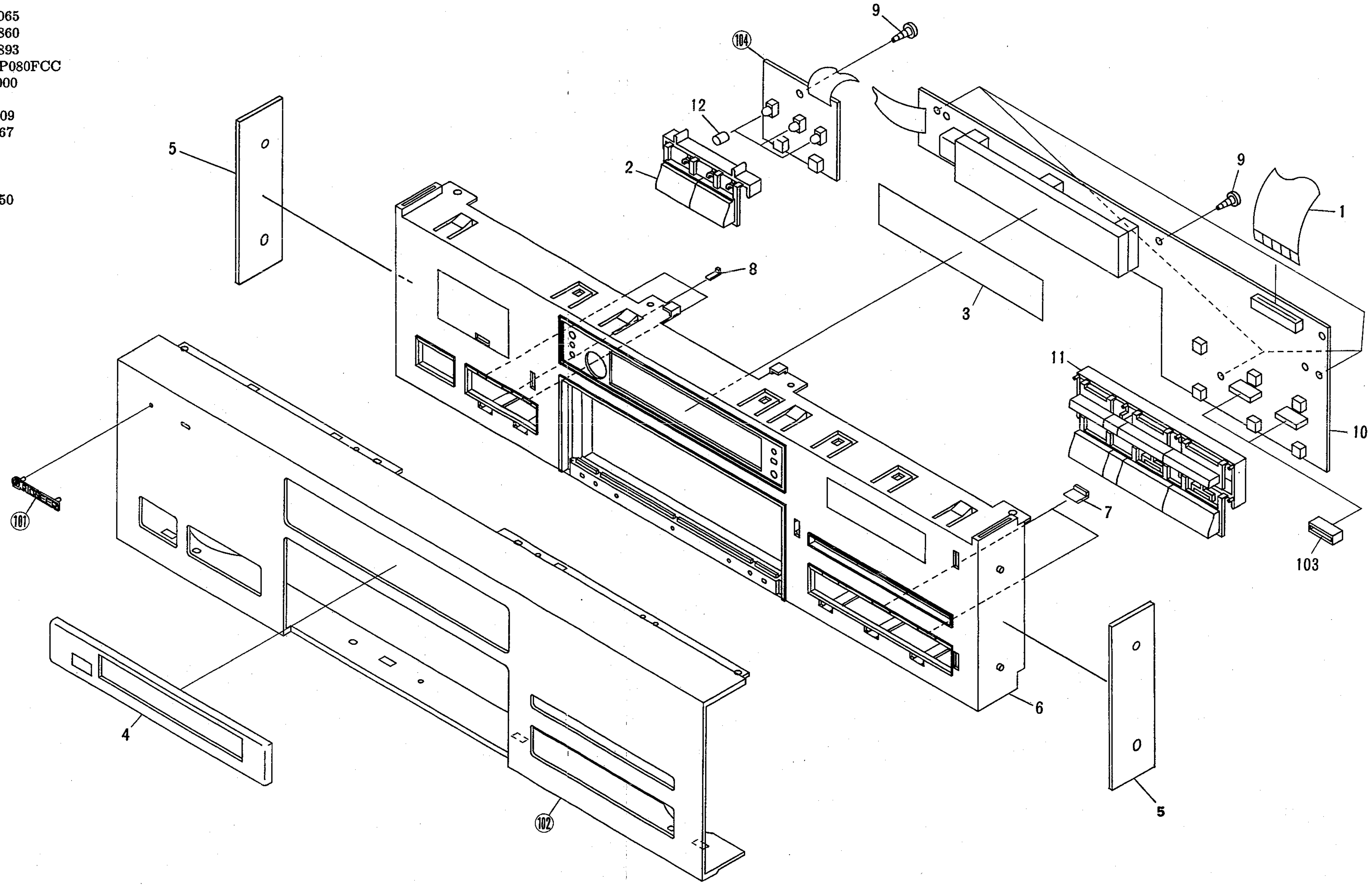
2.2 FRONT PANEL SECTION

Parts List of Front Panel section

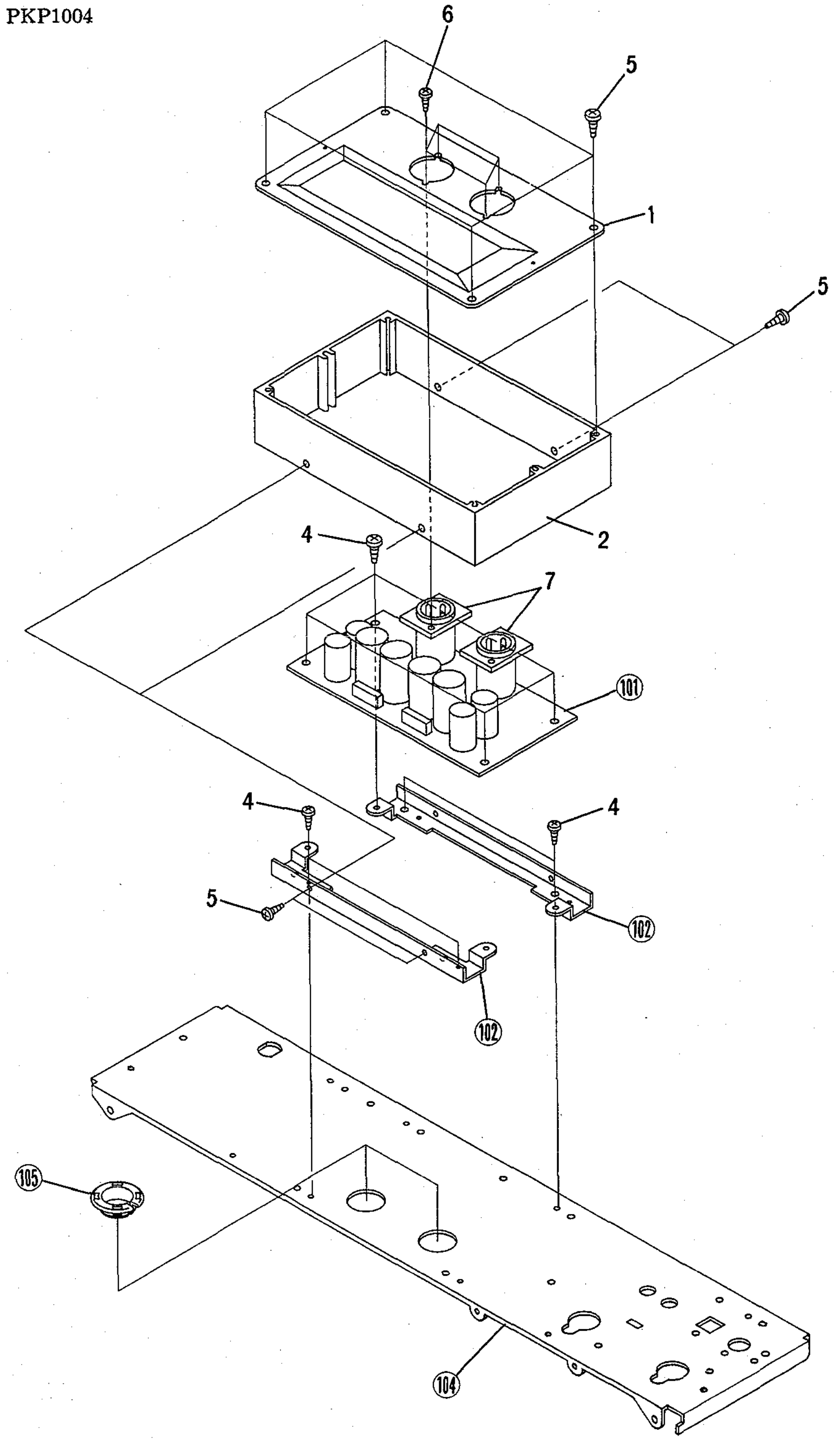
Mark	No.	Description	Parts No.
⚠	1	25P shield F.F.C	PDD1096
	2	Digital button	PAC1530
	3	FL sheet	PAM1290
	4	Display window(A)	PAM1515
	5	Side sash	PAN1220
	6	Function panel	PNW2065
	7	Lens(L)	PNW1860
	8	Lens(S)	PNW1893
	9	Screw	BBZ26P080FCC
◉	10	FUNCTION A BOARD assembly	PWZ2000
	11	Function button	PAC1609
	12	LED cover (S)	PEB1167
	101	Name plate	
	102	Front panel	
	103	LED cover	PEB1150
	104	FUNCTION B BOARD assembly	



2.3 REAR PANEL SECTION

Parts List of Rear Panel section

Mark	No.	Description	Parts No.
	1	Balance cover	PAT1004
	2	Balance case	PNS1019
	3	• • • • •	
	4	Screw	BBZ30P080FCC
	5	Screw	BBT30P080FZK
	6	Screw	PMZ26P060FZK
	7	3P receptacle	PKP1004
	101	BALANCE BOARD assembly	
	102	Balance angle	
	103	• • • • •	
	104	Rear base	
	105	Edge cover	



2.4 MECHANISM SECTION

Parts List of Mechanism section

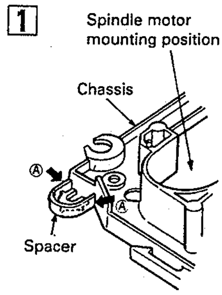
Mark	No.	Description	Parts No.
	1	Lever switch	DSK1003
	2	Floating screw	PBA1064
	3	Floating spring (A)	PBH1098
	4	Floating spring (B)	PBH1099
	5	Bias spring	PHB1112
	6	Floating spring (C)	PBH1113
	7	Floating spring (D)	PBH1114
	8	Belt	PEB1138
	9	Dumper rubber	PEB1146
	10	Stopper rubber	PEB1085
	11	Screw	PMZ30P350FCU
	12	Roller	PNW2037
	13	Blind sheet	
	14	Gear	PNW1097
	15	Motor pulley	PNW1643
	16	Cam	PNW1816
	17	Synchro gear	PNW1817
	18	Gear pulley	PNW1870
	19	Single gear	PNW1878
	20	Lock plate	PNW2013
	21	Loading base (L)	PNW2050
	22	Loading base (R)	PNW2051
	23	DC motor	PXM1010
	24	Cord clamper	RNH-184
	25	Screw	PBA1024
	26	Adjustment screw	PBA1054
	27	Lever spring	PBH1028
	28	Axis spring	PBH1029
	29	Adjustment spring	PBK1021
	30	Rivet	PBM-015
	31	Stopper rubber	PEB1035
	32	Rubber	PEB1048
	33	Guide bar	PLA1026
	34	Axis	PLA1027
	35	Disk table	PLA1088
	36	Roller	PLM1001
	37	Adjustment lever	PNB1048
	38	Spindle motor	PXM1026
	39	Pick up assembly	PWY1004
	40	Screw	BBZ30P060FCC
	41	Screw	IBZ30P080FCC
	42	Screw	PMZ26P030FCU
	43	Screw	PMZ26P060FCU
	44	Screw	PMZ30P080FCU
	45	Screw	PMZ30P160FCU
	46	Washer	WS30FMC
	47	Washer	WT26D047D025
	48	Screw	ZMD30H040FBT
	49	Drive unit	PYY1038
	50	Speed detection unit	PYY1039
	51	Ground plate	PDF1087
	52	· · · · ·	
	53	Washer	WT32D080D050
	54	Screw	PMA26P040FCU
	55	Screw	BPZ26P060FCU
	56	Screw	BPZ26P060FMC
	57	Washer	WT31D054D013
	58	Screw	IBZ30P060FCC
	59	Screw	ZMD30H040FBT
	60	Screw	PDZ30P060FCC
	101	· · · · ·	
	102	· · · · ·	
	103	Felt	
	104	Synchro gear axis	
	105	Gear angle	
	106	Mechanism deck	
	107	Bottom plate	
	108	Base plate	
	109	Collar	
	110	U guide	
	111	Servo mechanism assembly	
	112	Collar	
	113	Cushion rubber (2.5)	
	114	Magnet	
	115	Side yoke	
	116	Center yoke	
	117	Vinyl Sheet	
	118	Tape	
	119	Flexible cable	
	120	Carriage	
	121	Bobbin (A)	
	122	Bobbin (B)	
	123	Mechanism base unit	
	124	Binder	

• How to install the disc table

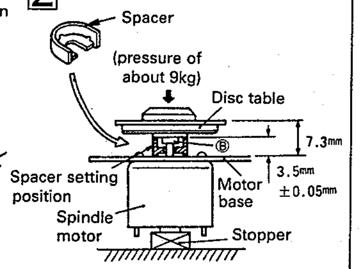
1 Use nippers or other tool to cut the two sections marked Ⓐ in figure 1. Then remove the spacer.

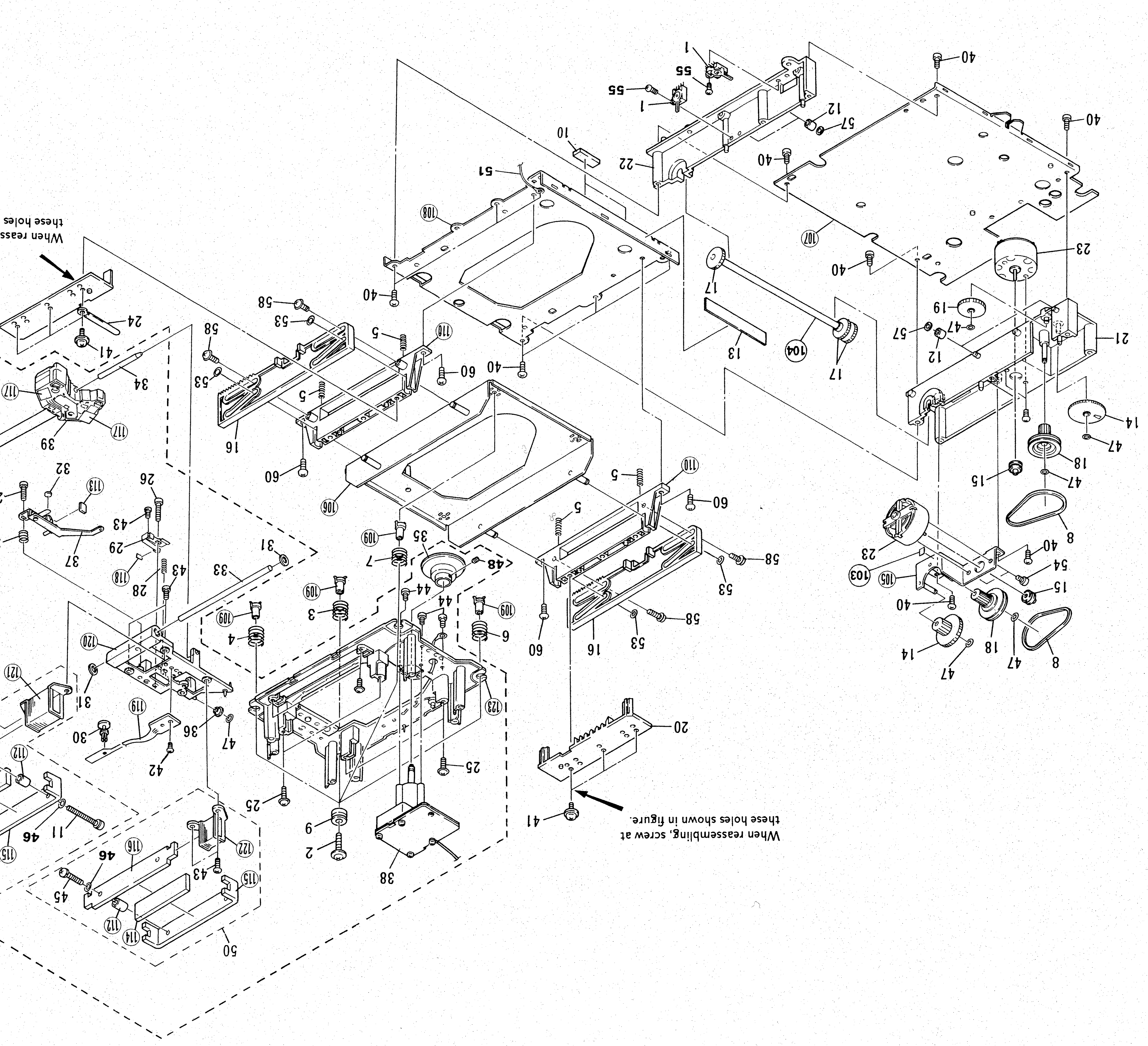
2 While supporting the spindle motor shaft with the stopper, put spacer on top of the motor base (angled so it doesn't touch section Ⓑ), and stick the disc table on top (takes about 9kg pressure). Take off the spacer.

1



2





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When reassembling, screw at these holes shown in figure.

When reass

these holes

PD3179B)

Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
0	17	0	33	5	49	0.2 ~0.3
1. 5	18	5	34	5	50	5
2. 1	19	5	35	0	51	0
5	20	0	36	5	52	0
5	21	0	37	5	53	0
5	22	5	38	5	54	0
5. 4	23	4. 9	39	0	55	0
0	24	5	40	0	56	0
5	25	0	41	0.3 ~0.4	57	0
5	26	0	42	0	58	0
5	27	0	43	0	59	0
3 ~1.9	28	0	44	0	60	0
5	29	4. 9	45	0	61	0
5	30	4. 9	46	0	62	0
0	31	0	47	0	63	0
5	32	0	48	5	64	2. 5

IC401 (PDG036)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0.3 ~0.4	17	5	33	1. 3	49	−20. 9
2	0	18	5	34	4. 9	50	−20. 9
3	4. 9	19	5	35	4. 9	51	−20. 9
4	4. 9	20	5	36	1. 3	52	−20. 9
5	5. 1	21	5	37	1. 3	53	−20. 9
6	0	22	5	38	5	54	−20. 9
7	0.3 ~0.4	23	5	39	−24. 4	55	−20. 5
8	0	24	0	40	−21. 3	56	−20. 5
9	0	25	0	41	5. 1	57	−26
10	0	26	0	42	0. 6	58	0
11	0	27	0	43	5	59	0
12	0	28	5	44	−24. 4	60	2. 3
13	0	29	5	45	1. 6	61	2. 2
14	0	30	0	46	−23. 6	62	5
15	0	31	0	47	−20. 9	63	5
16	5	32	0	48	−20. 9	64	5

•TERMINAL VOLTAGES

IC1 (CXA1081S)

Pin No.	Voltage	Pin No.	Voltage
1	0	16	−3
2	1. 3	17	−5
3	0	18	0
4	2. 4	19	0
5	2. 8	20	0
6	−4. 8	21	−4. 9
7	0	22	0
8	0	23	−1
9	0	24	−2. 1
10	0	25	0
11	0	26	2. 5
12	−1. 2	27	2. 4
13	−0. 1	28	5
14	0	29	0
15	−3. 1	30	5

IC2 (CXA1082BS)

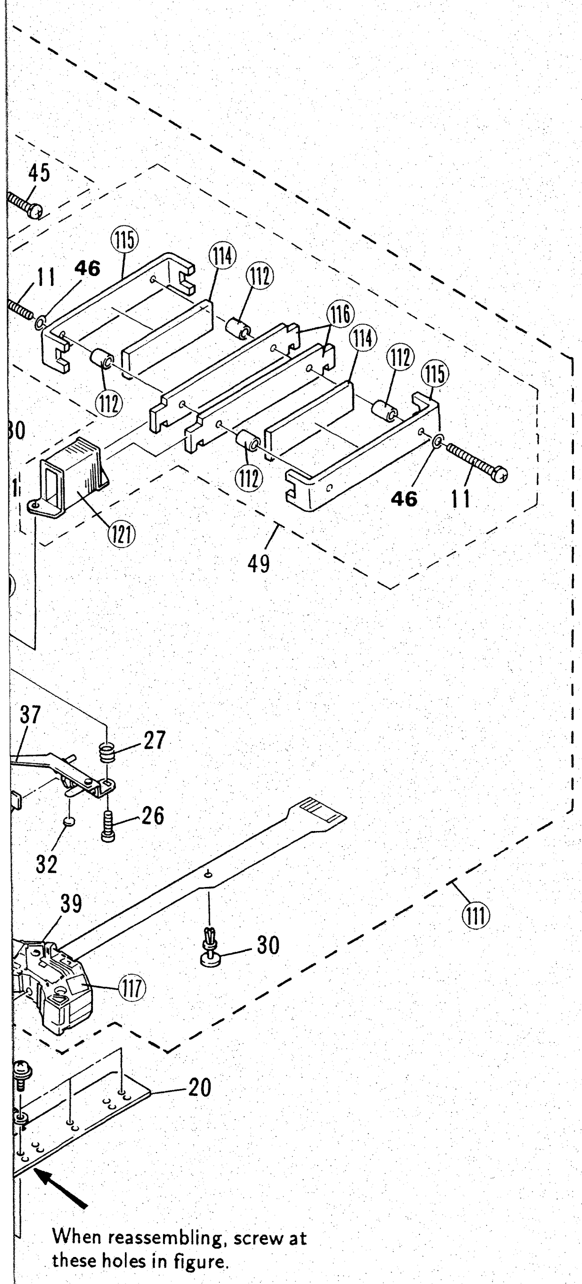
Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	−5	17	0	33	2. 5
2	0	18	0	34	2. 5
3	0	19	0	35	2. 3
4	0	20	0	36	2. 3
5	0	21	0	37	3. 5
6	0	22	0	38	2. 4
7	0	23	−4. 1	39	5
8	0	24	5	40	2. 5
9	0	25	−5	41	5
10	0	26	0	42	2. 5
11	0. 2	27	5	43	5
12	0	28	5	44	0
13	0. 2	29	5	45	0.23~0.28
14	0	30	5	46	2. 5
15	0	31	5	47	5
16	5	32	0	48	0

IC3 (CXD1167Q)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	2. 5	21	0	41	0	61	1. 3
2	5	22	0. 12	42	0	62	0
3	2. 5	23	0	43	0	63	0
4	2. 8	24	0	44	0	64	0
5	2. 4	25	5	45	0	65	0
6	2. 5	26	5	46	0	66	0
7	5	27	2. 5	47	0	67	0
8	2. 4	28	5	48	0	68	2. 5
9	2. 4	29	1. 9	49	0	69	2. 5
10	0	30	1. 9	50	0	70	2. 3
11	1. 8	31	0	51	2. 3	71	5
12	0	32	0	52	0	72	0
13	5	33	5	53	2. 2	73	5
14	5	34	0	54	2. 2	74	0
15	5	35	0	55	0	75	2. 4
16	5	36	0	56	0	76	2. 3
17	0	37	0	57	5	77	2. 3
18	5	38	0	58	0	78	2. 5
19	0	39	0	59	0	79	2. 5
20	5	40	0	60	1. 3	80	2. 5

IC4 (PD3179B

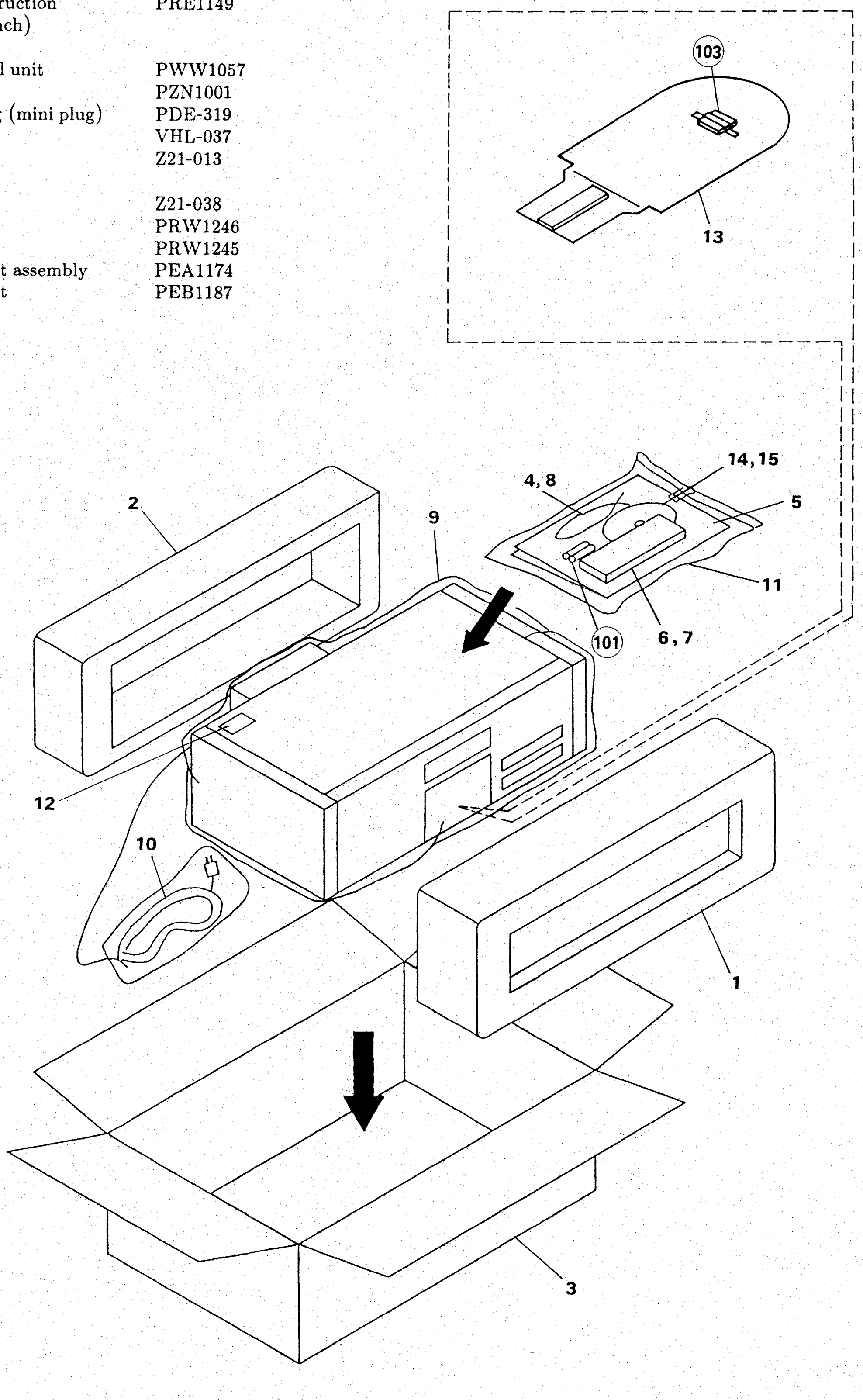
Pin No.	Voltage	Pi No
1	0	1
2	1. 5	1
3	2. 1	1
4	5	2
5	5	2
6	5	2
7	5. 4	2
8	0	2
9	5	2
10	5	2
11	5	2
12	1.3 ~1.9	2
13	5	2
14	5	3
15	0	3
16	5	3



When reassembling, screw at these holes in figure.

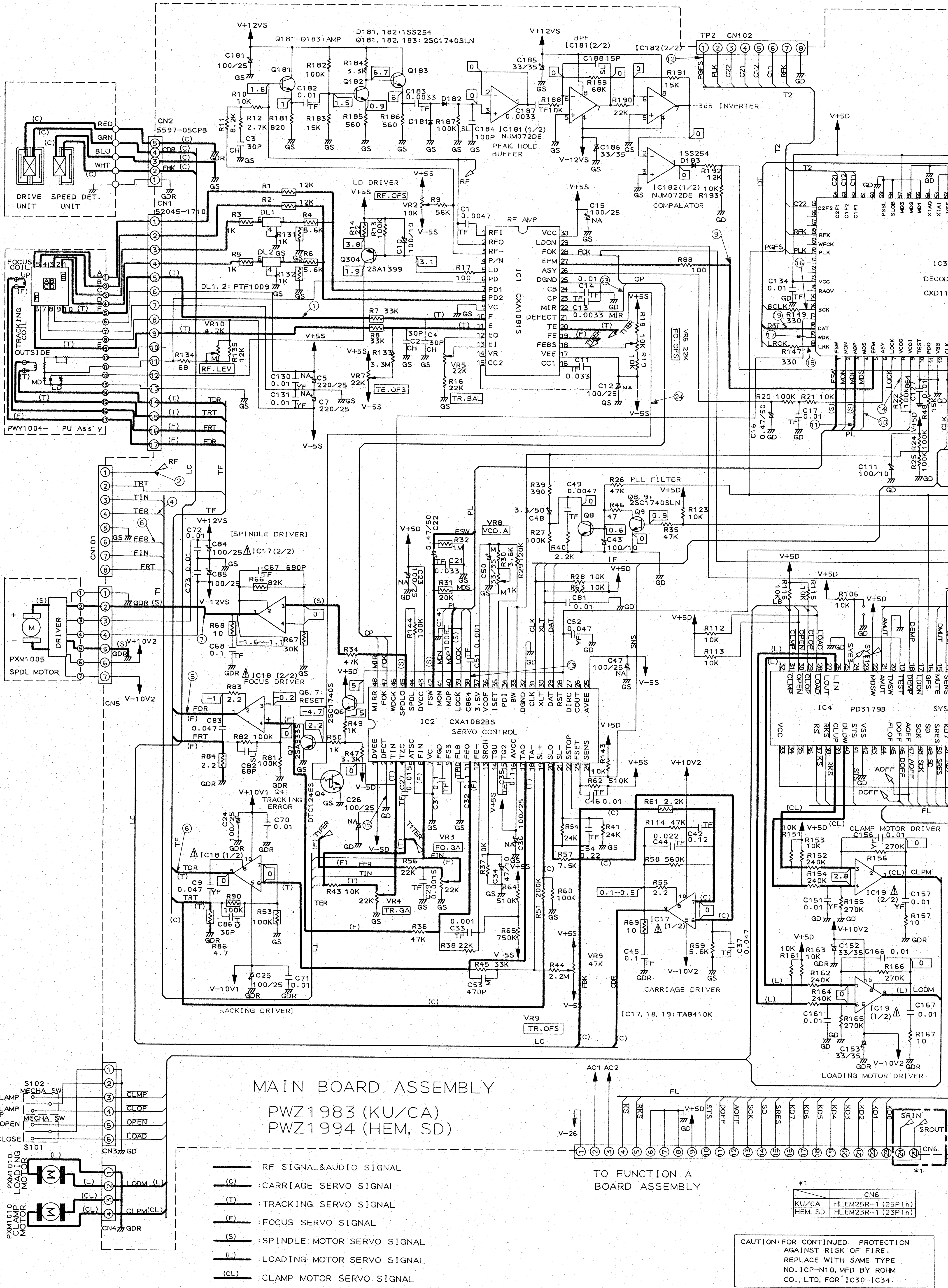
3. PACKING

Mark	No.	Description	Parts No.
	1	Protector (F)	PHA1171
	2	Protector (R)	PHA1172
	3	CD packing case	PHG1676
	4	Cord with plug (pin plug)	PDE1003
	5	Operating instruction (English, French)	PRE1149
	6	Remote control unit	PWW1057
	7	Battery cover	PZN1001
	8	Cord with plug (mini plug)	PDE-319
	9	Mirror mat	VHL-037
	10	Vinyl pouch	Z21-013
	11	Vinyl pouch	Z21-038
	12	Caution label	PRW1246
	13	Sheet	PRW1245
	14	Turntable sheet assembly	PEA1174
	15	Turntable sheet	PEB1187
	101	Battery	
	103	Rubber spacer	



4. SCHEMATIC DIAGRAM AND P.C.BOARDS CONNECTION DIAGRAM

4.1 MAIN BOARD (PWZ 1983), PRIMARY BOARD, FUNCTION A BOARD(PWZ 2000), AND FUNCTION B BOARD ASSEMBLIES

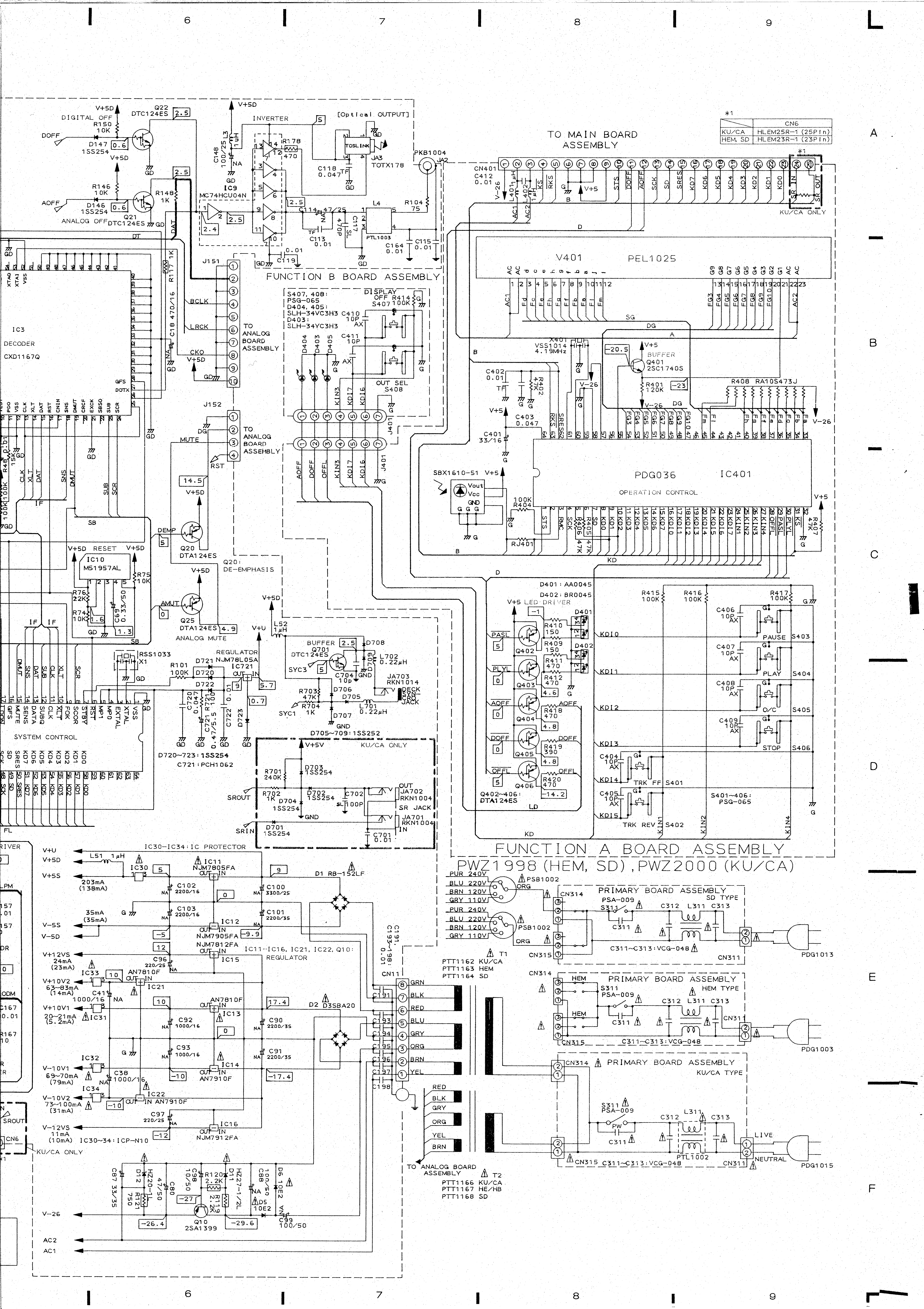

A
B
C
D
E
F
Q181–Q183: AMP
D181, 182: 1SS254
Q181, 182, 183: 2SC1740SLN
V+12VS
BPF
IC181(2/2)
IC182(2/2)
TP2 CN102
PGFS PLK C22 C21 C11 RFK GD
-3dB INVERTER
PEAK HOLD BUFFER
IC181(1/2) NJM072DE
IC182(1/2) NJM072DE
COMPALATOR
1SS254 D183
DRIVE UNIT
SPEED DET. UNIT
RED GRN BLU WHT
CN2 5597-05CPB
CN1 52045-1710
LD DRIVER
RF.OFS
Q304 2SA1399
DL1, 2: PTF1009
FOCUS COIL
TRACKING COIL
OUTSIDE
MD LD
PWY1004- PU Ass'y
RF.LEV
TE.OFS
TR.BAL
RF AMP
IC1 CXA1081S
RFI RFO RF- P/N LD PD PD1 PD2 VC F E EO EI VR CC2
VCC LDON FOK EFM ASY DGND CB CP MIR DEFECT TE FE FEBS VEE CC1
FO.OFS
VR6 22K
CN101
RF TRT TIN TER TF FER FIN FRT
(SPINDLE DRIVER)
IC17(2/2)
PXM1005 SPDL MOTOR
DRIVER
IC18 (2/2) FOCUS DRIVER
Q6, 7: RESET
CN5
IC18 (1/2)
TRACKING ERROR
TRACKING DRIVER
PLL FILTER
Q8, 9: 2SC1740SLN
VCO.A
IC2 CXA1082BS SERVO CONTROL
FO.GA
TR.GA
TR.OFS
VR9
CARRIAGE DRIVER
IC17 (1/2)
IC17, 18, 19: TA8410K
IC4 PD3179B
CLAMP MOTOR DRIVER
IC19 (2/2)
IC19 (1/2)
LOADING MOTOR DRIVER
CLPM LODM
IC3 DECOD CXD11
S102 MECHA SW
CLAMP CLAMP UP OPEN CLOSE
S101 MECHA SW
CLMP CLOP OPEN LOAD
CN3
PXM1010 LOADING MOTOR
PXM1010 CLAMP MOTOR
CN4
AC1 AC2
FL
MAIN BOARD ASSEMBLY
PWZ1983 (KU/CA)
PWZ1994 (HEM, SD)
TO FUNCTION A BOARD ASSEMBLY
CN6
SRIN SROUT
*1

——— : RF SIGNAL&AUDIO SIGNAL
—(C)— : CARRIAGE SERVO SIGNAL
—(T)— : TRACKING SERVO SIGNAL
—(F)— : FOCUS SERVO SIGNAL
—(S)— : SPINDLE MOTOR SERVO SIGNAL
—(L)— : LOADING MOTOR SERVO SIGNAL
—(CL)— : CLAMP MOTOR SERVO SIGNAL

*1

	CN6
KU/CA	HLEM25R-1 (25Pin)
HEM, SD	HLEM23R-1 (23Pin)

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE NO. ICP-N10, MFD BY ROHM CO., LTD, FOR IC30–IC34.


6
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9
A
B
C
D
E
F
TO MAIN BOARD ASSEMBLY
*1
CN6
KU/CA HLEM25R-1 (25PIn)
HEM, SD HLEM23R-1 (23PIn)
KU/CA ONLY
CN401
C412 0.01
L401 1μH
L402 1μH
V-26
AC1
AC2
KS
RKS
V+5
STS
DOFF
AOFF
SCK
SD
SRES
KD7
KD6
KD5
KD4
KD3
KD2
KD1
KD0
SR IN
SR OUT
V401
PEL1025
DIGITAL OFF
DOFF
V+5D
Q22 DTC124ES
R150 10K
D147 1SS254
R146 10K
D146 1SS254
Q21 DTC124ES
ANALOG OFF
R148 1K
C148 100/25
INVERTER
IC9 MC74HCU04N
[Optical OUTPUT]
TOSLINK
JA3 TOTX178
R178 470
C118 0.047
PKB1004
JA2
C114 47/25
C117 470P
L4 PTL1003
R104 75
C115 0.01
C164 0.01
C113 0.01
C119 0.01
FUNCTION B BOARD ASSEMBLY
J151
BCLK
LRCK
CKO
TO ANALOG BOARD ASSEMBLY
J152
MUTE
RST
DEMP
Q20 DTA124ES
Q20: DE-EMPHASIS
AMUT
Q25 DTA124ES
ANALOG MUTE
R117 1K
C18 470/16
IC3
DECODER
CXD1167Q
GFS
DOTX
SB
IF
V+5D RESET
IC10 M51957AL
R75 10K
R76 22K
R74 10K
C69 0.33/50
RSS1033 X1
R101 100K
REGULATOR NJM78L05A IC721
D720
D721
D722
C720 0.047
R721 100
C721 0.47/5.5
C722 0.01
D723
D720~723: 1SS254
C721: PCH1062
SYSTEM CONTROL
S407, 408: PSG-065
D404, 405: SLH-34VC3H3
D403: SLH-34YC3H3
DISPLAY OFF
S407
R414 100K
C410 10P
C411 10P
OUT SEL S408
D403
D404
D405
KIN3
KD17
KD16
J401
AOFF
DOFF
OFFL
BUFFER Q701 DTC124ES
SYC3
D708
D709
L702 0.22μH
C704 10p
JA703 RKN1014 DECK SYNC JACK
R703 47K
R704 1K
SYC1
D706
D705
D707
L701 0.22μH
D705~709: 1SS252
KU/CA ONLY
R701 240K
D703 1SS254
SROUT
R702 1K
D704 1SS254
D702 1SS254
C702 100P
JA702 RKN1004 SR JACK
SRIN
D701 1SS254
JA701 RKN1004 IN
C701 0.01
L52 1μH
X401 VSS1014 4.19MHz
Q401 2SC1740S BUFFER
R401 120K
C402 0.01
R402 47K
C403 0.047
C401 33/16
R408 RA10S473J
PDG036 IC401
OPERATION CONTROL
SBX1610-51
Vout Vcc GND
R404 100K
RJ401
R406 47K
R405 47K
R407 47K
D401: AA0045
D402: BR0045
V+5 LED DRIVER
PASL
PLYL
Q402
Q403
Q404
Q405
Q406
R410 150
R409 150
R411 470
R412 470
R418 470
R419 390
R420 470
Q402~406: DTA124ES
LD
KD
R415 100K
R416 100K
R417 100K
C406 10P
C407 10P
C408 10P
C409 10P
C404 10P
C405 10P
PAUSE S403
PLAY S404
O/C S405
STOP S406
TRK FF S401
TRK REV S402
S401~406: PSG-065
KIN1
KIN2
KIN4
FUNCTION A BOARD ASSEMBLY
PWZ1998 (HEM, SD), PWZ2000 (KU/CA)
IC30~IC34: IC PROTECTOR
L51 1μH
IC30
IC11 NJM7805FA
C102 2200/16
C100 3300/25
C101 2200/35
C103 2200/16
IC12 NJM7905FA
NJM7812FA IC15
C96 220/25
IC11~IC16, IC21, IC22, Q10: REGULATOR
IC33
AN7810F IC21
C41 1000/16
AN7810F IC13
C92 1000/16
C90 2200/35
C93 1000/16
C91 2200/35
IC14 AN7910F
IC32
C38 1000/16
IC34
IC22 AN7910F
C97 220/25
IC16 NJM7912FA
IC30~34: ICP-N10
D1 RB-152LF
D2 D3SBA20
C191~198: 0.01
CN11
GRN BLK RED BLU GRY ORG BRN YEL
V+U
V+5D
V+5S
203mA (138mA)
35mA (35mA)
V-5S
V-5D
V+12VS 24mA (23mA)
V+10V2 63~83mA (14mA)
V+10V1 20~21mA (5.2mA)
V-10V1 69~70mA (79mA)
V-10V2 73~100mA (31mA)
V-12VS 11mA (10mA)
KU/CA ONLY
C87 33/35
D12 HZ20-1
R121 750
C80 47/50
C98 10/50
R120 2.2K
R119 2.2K
D11 HZ27-1/2L
C88 100/50
D5 10E2
D6 10E2
C99 100/50
Q10 2SA1399
V-26
AC2
AC1
TO ANALOG BOARD ASSEMBLY
T1 PTT1162 KU/CA PTT1163 HEM PTT1164 SD
T2 PTT1166 KU/CA PTT1167 HE/HB PTT1168 SD
PUR 240V BLU 220V BRN 120V GRY 110V
PSB1002
CN314
CN315
PRIMARY BOARD ASSEMBLY SD TYPE
PSA-009 S311
C311 C312 L311 C313
C311~C313: VCG-048
CN311
PDG1013
PRIMARY BOARD ASSEMBLY HEM TYPE
HEM
PDG1003
PRIMARY BOARD ASSEMBLY KU/CA TYPE
PW
PTL1002
LIVE
NEUTRAL
PDG1015

*3

IC1 (CXA1081S)

Pin No.	Voltage	Pin No.	Voltage
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

*4

IC2 (CXA1082BS)

Pin No.	Voltage	Pin No.	Voltage
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.23~0.28
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

*5

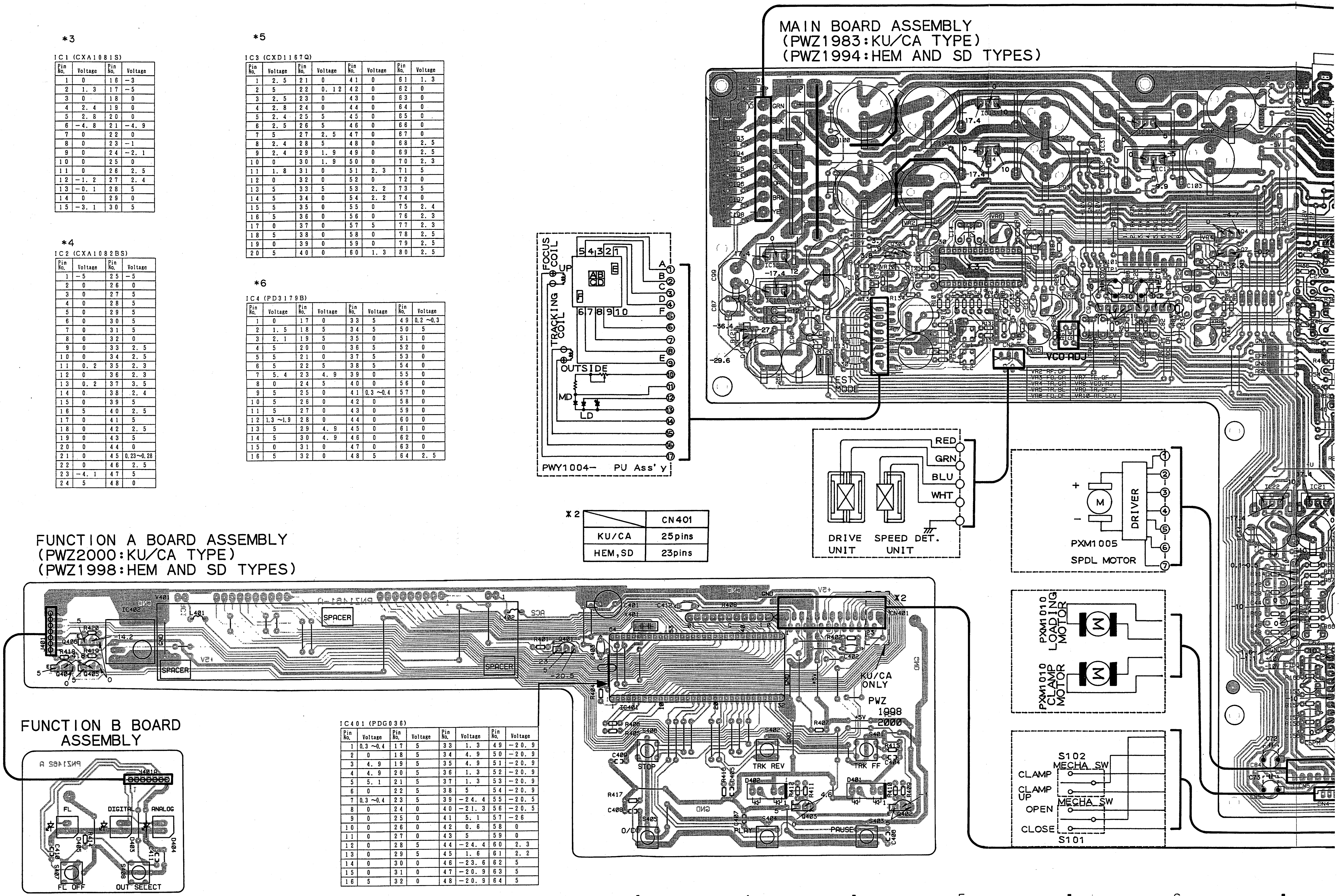
IC3 (CXD1167Q)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	2.5	21	0	41	0	61	1.3
2	5	22	0.12	42	0	62	0
3	2.5	23	0	43	0	63	0
4	2.8	24	0	44	0	64	0
5	2.4	25	5	45	0	65	0
6	2.5	26	5	46	0	66	0
7	5	27	2.5	47	0	67	0
8	2.4	28	5	48	0	68	2.5
9	2.4	29	1.9	49	0	69	2.5
10	0	30	1.9	50	0	70	2.3
11	1.8	31	0	51	2.3	71	5
12	0	32	0	52	0	72	0
13	5	33	5	53	2.2	73	5
14	5	34	0	54	2.2	74	0
15	5	35	0	55	0	75	2.4
16	5	36	0	56	0	76	2.3
17	0	37	0	57	5	77	2.3
18	5	38	0	58	0	78	2.5
19	0	39	0	59	0	79	2.5
20	5	40	0	60	1.3	80	2.5

*6

IC4 (PD3179B)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	17	0	33	5	49	0.2 ~0.3
2	1.5	18	5	34	5	50	5
3	2.1	19	5	35	0	51	0
4	5	20	0	36	5	52	0
5	5	21	0	37	5	53	0
6	5	22	5	38	5	54	0
7	5.4	23	4.9	39	0	55	0
8	0	24	5	40	0	56	0
9	5	25	0	41	0.3 ~0.4	57	0
10	5	26	0	42	0	58	0
11	5	27	0	43	0	59	0
12	1.3 ~1.9	28	0	44	0	60	0
13	5	29	4.9	45	0	61	0
14	5	30	4.9	46	0	62	0
15	0	31	0	47	0	63	0
16	5	32	0	48	5	64	2.5



MAIN BOARD ASSEMBLY
(PWZ1983:KU/CA TYPE)
(PWZ1994:HEM AND SD TYPES)

FUNCTION A BOARD ASSEMBLY
(PWZ2000:KU/CA TYPE)
(PWZ1998:HEM AND SD TYPES)

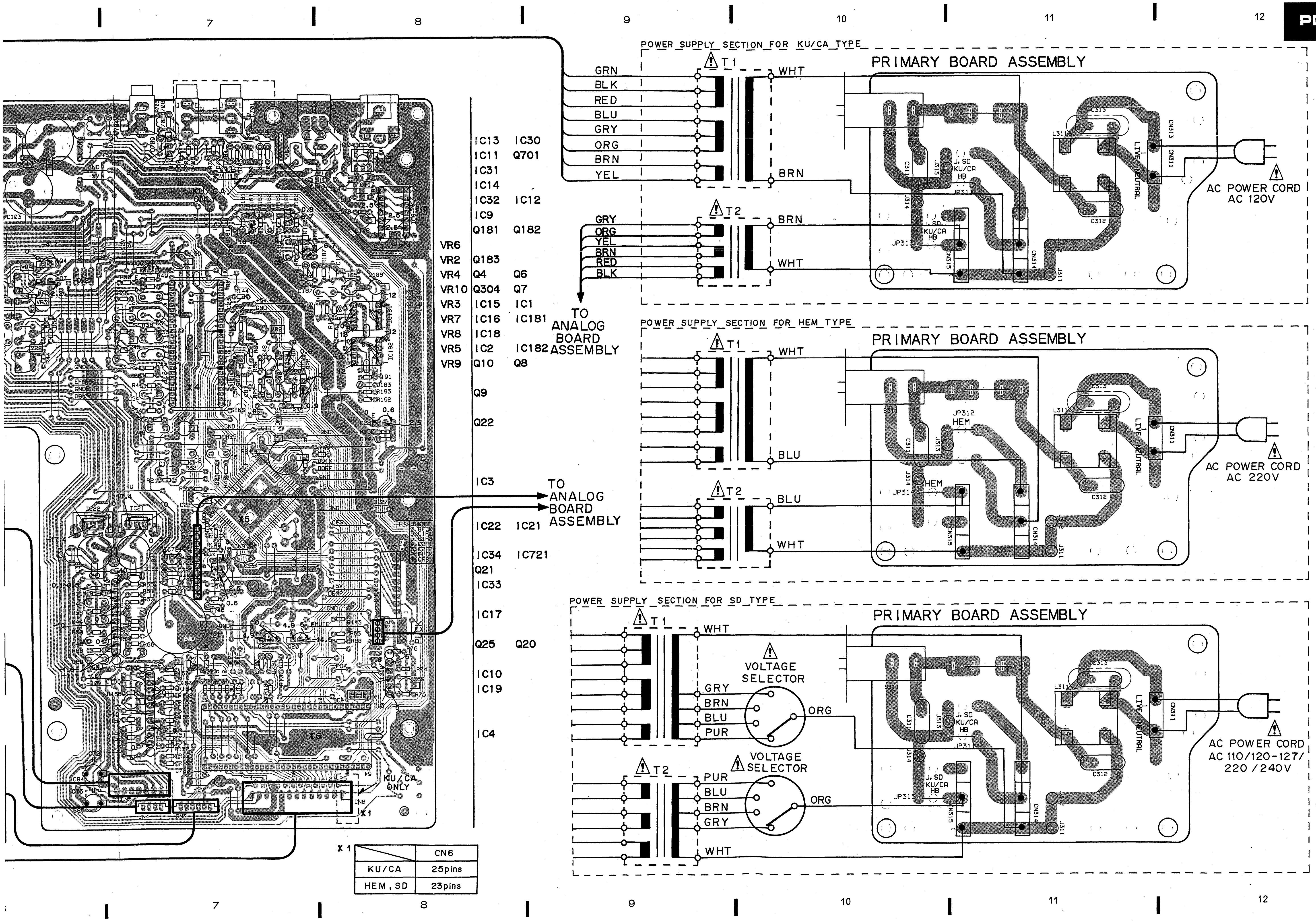
FUNCTION B BOARD
ASSEMBLY

※2	CN401
KU/CA	25pins
HEM,SD	23pins

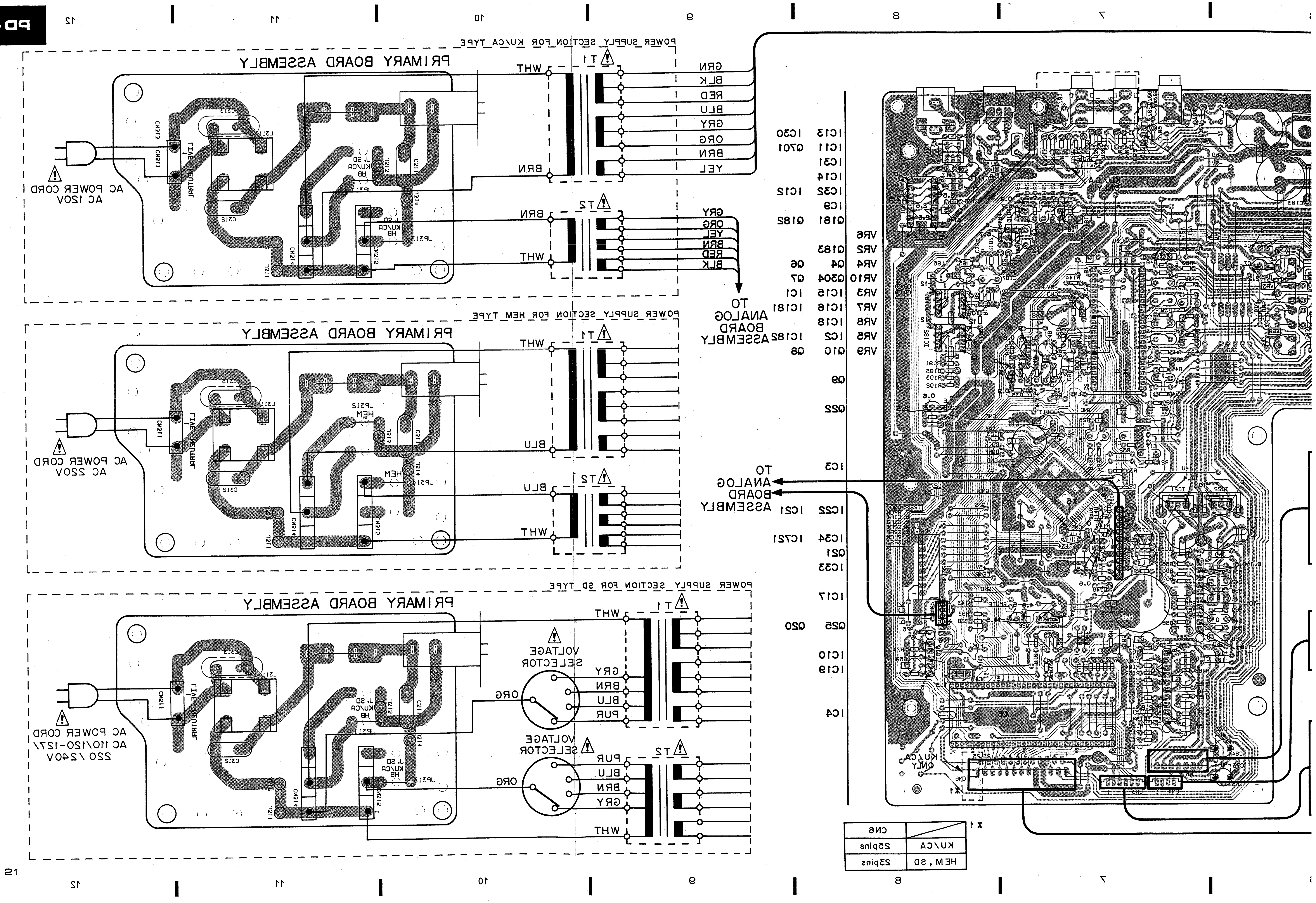
IC401 (PDG036)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0.3 ~0.4	17	5	33	1.3	49	−20.9
2	0	18	5	34	4.9	50	−20.9
3	4.9	19	5	35	4.9	51	−20.9
4	4.9	20	5	36	1.3	52	−20.9
5	5.1	21	5	37	1.3	53	−20.9
6	0	22	5	38	5	54	−20.9
7	0.3 ~0.4	23	5	39	−24.4	55	−20.5
8	0	24	0	40	−21.3	56	−20.5
9	0	25	0	41	5.1	57	−26
10	0	26	0	42	0.6	58	0
11	0	27	0	43	5	59	0
12	0	28	5	44	−24.4	60	2.3
13	0	29	5	45	1.6	61	2.2
14	0	30	0	46	−23.6	62	5
15	0	31	0	47	−20.9	63	5
16	5	32	0	48	−20.9	64	5

1
2
3
4
5
6
A
B
C
D
FOCUS COIL
UP
TRACKING COIL
OUTSIDE
MD
LD
PWY1004— PU Ass'y
RED
GRN
BLU
WHT
DRIVE UNIT
SPEED DET. UNIT
DRIVER
PXM1005
SPDL MOTOR
PXM1010 LOADING MOTOR
PXM1010 CLAMP MOTOR
S102
MECHA SW
CLAMP
CLAMP UP
OPEN
MECHA SW
CLOSE
S101
VCO ADJ
TEST MODE
VR2 RF.OP
VR3 FO.GN
VR4 TR.GN
VR5 TR.BL
VR6 FO.OF
VR7 TE.OF
VR8 VCO.ADJ
VR9 TR.OF
VR10 RF.LEV
IC401
CN401
SPACER
KU/CA ONLY
PWZ 1998 2000
STOP
TRK REV
TRK FF
PLAY
PAUSE
O/C
FL
DIGITAL
ANALOG
FL OFF
OUT SELECT


7
8
9
10
11
12
A
B
C
D
IC13 IC30
IC11 Q701
IC31
IC14
IC32 IC12
IC9
Q181 Q182
VR6
VR2 Q183
VR4 Q4 Q6
VR10 Q304 Q7
VR3 IC15 IC1
VR7 IC16 IC181
VR8 IC18
VR5 IC2 IC182
VR9 Q10 Q8
Q9
Q22
IC3
IC22 IC21
IC34 IC721
Q21
IC33
IC17
Q25 Q20
IC10
IC19
IC4
KU/CA ONLY
X4
X5
X6
CN4
CN5
CN6
X1
TO ANALOG BOARD ASSEMBLY
TO ANALOG BOARD ASSEMBLY
POWER SUPPLY SECTION FOR KU/CA TYPE
POWER SUPPLY SECTION FOR HEM TYPE
POWER SUPPLY SECTION FOR SD TYPE
PRIMARY BOARD ASSEMBLY
T1
T2
GRN
BLK
RED
BLU
GRY
ORG
BRN
YEL
WHT
PUR
VOLTAGE SELECTOR
S311
C311
J313
J314
J.SD KU/CA HB
JP311
JP312 HEM
JP313
JP314
CN313
CN311
CN314
CN315
J311
J312
L311
C313
C312
LIVE
NEUTRAL
AC POWER CORD AC 120V
AC POWER CORD AC 220V
AC POWER CORD AC 110/120-127/220/240V

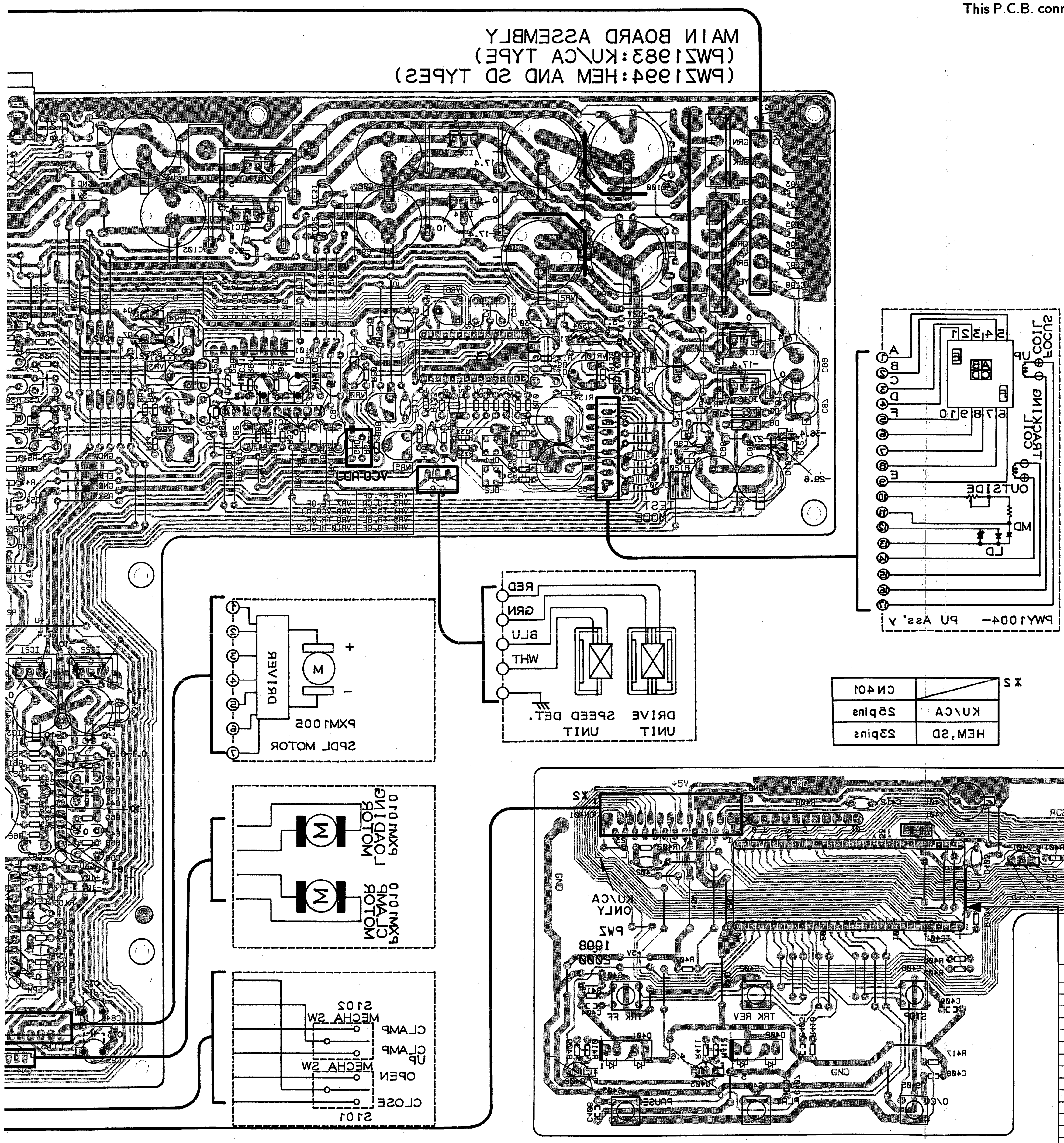
X1	CN6
KU/CA	25pins
HEM, SD	23pins


POWER SUPPLY SECTION FOR KU/CA TYPE
PRIMARY BOARD ASSEMBLY
AC POWER CORD
AC 120V
T1
T2
WHT
BRN
GRN
BLK
RED
BLU
GRY
ORG
YEL
TO ANALOG BOARD ASSEMBLY
POWER SUPPLY SECTION FOR HEM TYPE
AC 220V
POWER SUPPLY SECTION FOR SD TYPE
AC 110/120-127/220/240V
VOLTAGE SELECTOR
PUR
CN101
L511
C512
C513
CN511
CN514
JP511
JP512
JP513
JP514
NEUTRAL
J・SD
KU/CA
HB
HEM
IC13
IC30
IC11
Q701
IC31
IC14
IC32
IC12
IC9
IC181
Q182
VR6
Q183
VR2
VR4
Q4
Q6
VR10
Q304
Q7
VR3
IC15
IC1
VR7
IC16
IC181
VR8
IC18
VR5
IC2
IC182
VR9
Q10
Q8
Q9
Q22
IC3
IC22
IC21
IC34
IC721
Q21
IC33
IC17
Q25
Q20
IC10
IC19
IC4
X4
X5
X6
KU/CA ONLY
CN6
CN3
CN4
GND
MUTE
※1
12
11
10
9
8
7
A
B
C
D
21

※1	CN6
KU/CA	25pins
HEM, SD	23pins

This P.C.B. connection diagram is viewed from the foil side.

MAIN BOARD ASSEMBLY
(PWZ1983:KU/CA TYPE)
(PWZ1994:HEM AND SD TYPES)



VCO ADJ
TEST MODE
FOCUS COIL
TRACKING COIL
OUTSIDE
MD
LD
PWY1004- PU Ass' y
RED
GRN
BLU
WHT
DRIVE UNIT
SPEED DET. UNIT
DRIVER
PXM1005
SPDL MOTOR
PXM1010 LOADING MOTOR
PXM1010 CLAMP MOTOR
S102 MECHA SW
CLAMP
CLAMP UP
MECHA SW
OPEN
CLOSE
S101
KU/CA ONLY
PWZ 1998 2000
TRK FF
TRK REV
STOP
PAUSE
PLAY
0/C
GND

※2

	CN401
KU/CA	25pins
HEM,SD	23pins

*5

IC3 (CXD1167Q)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	2.5	21	0	41	0	61	1.3
2	5	22	0.12	42	0	62	0
3	2.5	23	0	43	0	63	0
4	2.8	24	0	44	0	64	0
5	2.4	25	5	45	0	65	0
6	2.5	26	5	46	0	66	0
7	5	27	2.5	47	0	67	0
8	2.4	28	5	48	0	68	2.5
9	2.4	29	1.9	49	0	69	2.5
10	0	30	1.9	50	0	70	2.3
11	1.8	31	0	51	2.3	71	5
12	0	32	0	52	0	72	0
13	5	33	5	53	2.2	73	5
14	5	34	0	54	2.2	74	0
15	5	35	0	55	0	75	2.4
16	5	36	0	56	0	76	2.3
17	0	37	0	57	5	77	2.3
18	5	38	0	58	0	78	2.5
19	0	39	0	59	0	79	2.5
20	5	40	0	60	1.3	80	2.5

*3

IC1 (CXA1081S)

Pin No.	Voltage	Pin No.	Voltage
1	0	16	−3
2	1.3	17	−5
3	0	18	0
4	2.4	19	0
5	2.8	20	0
6	−4.8	21	−4.9
7	0	22	0
8	0	23	−1
9	0	24	−2.1
10	0	25	0
11	0	26	2.5
12	−1.2	27	2.4
13	−0.1	28	5
14	0	29	0
15	−3.1	30	5

*6

IC4 (PD3179B)

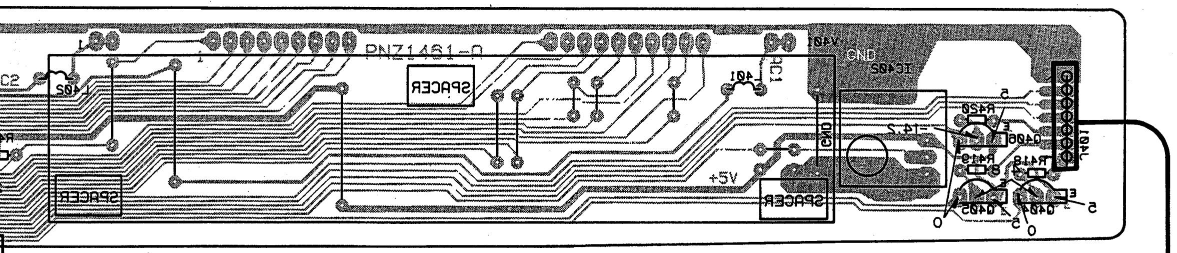
Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0	17	0	33	5	49	0.2 ~0.3
2	1.5	18	5	34	5	50	5
3	2.1	19	5	35	0	51	0
4	5	20	0	36	5	52	0
5	5	21	0	37	5	53	0
6	5	22	5	38	5	54	0
7	5.4	23	4.9	39	0	55	0
8	0	24	5	40	0	56	0
9	5	25	0	41	0.3 ~0.4	57	0
10	5	26	0	42	0	58	0
11	5	27	0	43	0	59	0
12	1.3 ~1.9	28	0	44	0	60	0
13	5	29	4.9	45	0	61	0
14	5	30	4.9	46	0	62	0
15	0	31	0	47	0	63	0
16	5	32	0	48	5	64	2.5

*4

IC2 (CXA1082BS)

Pin No.	Voltage	Pin No.	Voltage
1	−5	25	−5
2	0	26	0
3	0	27	5
4	0	28	5
5	0	29	5
6	0	30	5
7	0	31	5
8	0	32	0
9	0	33	2.5
10	0	34	2.5
11	0.2	35	2.3
12	0	36	2.3
13	0.2	37	3.5
14	0	38	2.4
15	0	39	5
16	5	40	2.5
17	0	41	5
18	0	42	2.5
19	0	43	5
20	0	44	0
21	0	45	0.23~0.28
22	0	46	2.5
23	−4.1	47	5
24	5	48	0

FUNCTION A BOARD ASSEMBLY
(PWZ2000:KU/CA TYPE)
(PWZ1998:HEM AND SD TYPES)

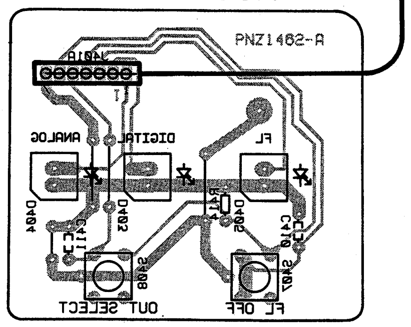


PNZ1461-Q
SPACER
GND
+V2

IC401 (PDG036)

Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage	Pin No.	Voltage
1	0.3 ~0.4	17	5	33	1.3	49	−20.9
2	0	18	5	34	4.9	50	−20.9
3	4.9	19	5	35	4.9	51	−20.9
4	4.9	20	5	36	1.3	52	−20.9
5	5.1	21	5	37	1.3	53	−20.9
6	0	22	5	38	5	54	−20.9
7	0.3 ~0.4	23	5	39	−24.4	55	−20.5
8	0	24	0	40	−21.3	56	−20.5
9	0	25	0	41	5.1	57	−26
10	0	26	0	42	0.6	58	0
11	0	27	0	43	5	59	0
12	0	28	5	44	−24.4	60	2.3
13	0	29	5	45	1.6	61	2.2
14	0	30	0	46	−23.6	62	5
15	0	31	0	47	−20.9	63	5
16	5	32	0	48	−20.9	64	5

FUNCTION B BOARD ASSEMBLY



PNZ1462-A
ANALOG
DIGITAL
FL
OUT SELECT
FL OFF

4.2 ANALOG BOARD(PWM 1364) AND BALANCE BOARD ASSEMBLIES

This P.C.B. connection diagram is viewed from the foil side.

*1

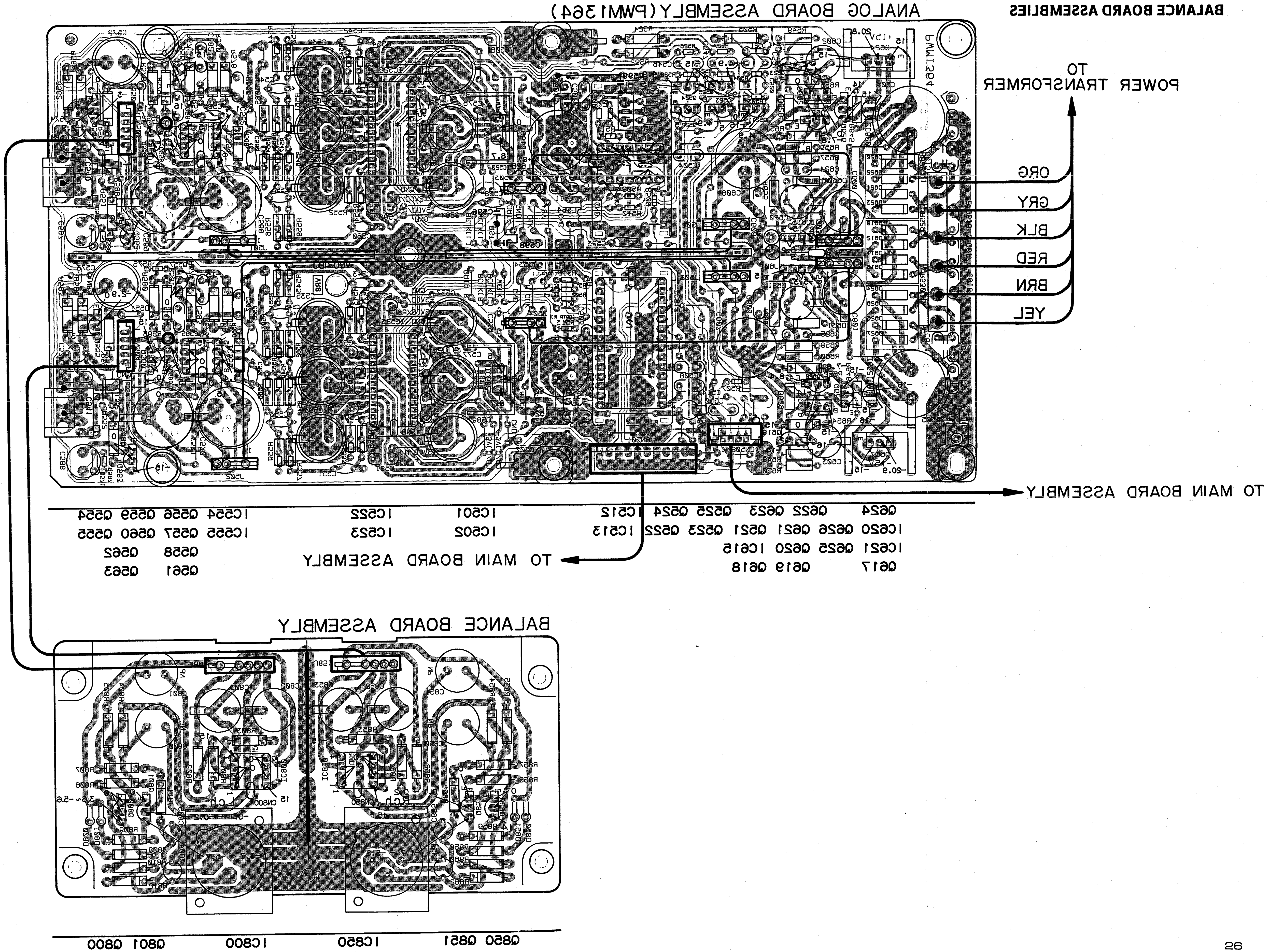
IC522, IC523 (PD2028A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	2.6	16	5
3	2	17	5
4	0	18	0
5	5	19	3.8
6	5	20	2.2
7	2.3	21	0
8	2.5	22	0
9	0	23	0
10	5	24	0
11	0	25	3.2
12	2	26	2.5
13	2.6	27	0
14	0	28	5

*2

IC513 (SM5813AP)

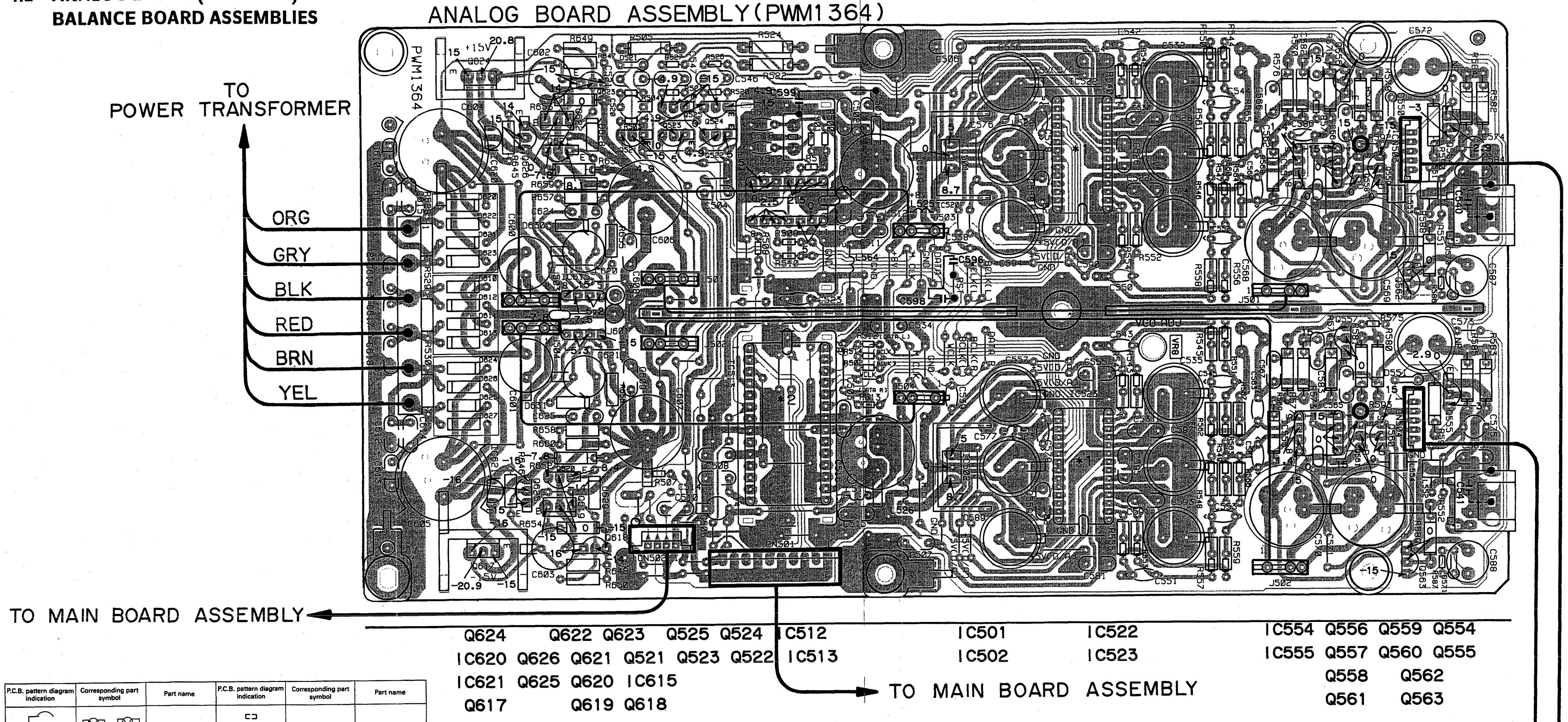
Pin No.	Voltage	Pin No.	Voltage
1	2.5	15	5
2	2.4	16	0
3	5	17	5
4	0	18	0
5	0	19	0
6	2.4	20	2.4
7	2.6	21	0
8	0	22	5
9	2.2	23	1.9
10	5	24	1.9
11	0	25	3.7
12	0	26	2.1
13	0	27	2.5
14	4.8	28	2.5


ANALOG BOARD ASSEMBLY(PWM1364)
TO POWER TRANSFORMER
ORG
GRY
BLK
RED
BRN
YEL
TO MAIN BOARD ASSEMBLY
TO MAIN BOARD ASSEMBLY
IC554 Q556 Q559 Q554
IC555 Q557 Q560 Q555
Q558 Q562
Q561 Q563
IC522
IC523
IC501
IC502
IC512 Q524 Q525 Q623 Q622 Q624
IC513 Q522 Q523 Q521 Q621 Q626 IC620
IC615 Q620 Q625 IC621
Q618 Q619 Q617
BALANCE BOARD ASSEMBLY
Lch
Rch
Q850 Q851 IC850 IC800 Q801 Q800

A
B
C
D

1
2
3
4
5
6

4.2 ANALOG BOARD(PWM 1364) AND BALANCE BOARD ASSEMBLIES


ANALOG BOARD ASSEMBLY(PWM1364)
PWM1364
TO POWER TRANSFORMER
ORG
GRY
BLK
RED
BRN
YEL
TO MAIN BOARD ASSEMBLY
TO MAIN BOARD ASSEMBLY
*1
*2
Q624 Q622 Q623 Q525 Q524 IC512 IC501 IC522 IC554 Q556 Q559 Q554
IC620 Q626 Q621 Q521 Q523 Q522 IC513 IC502 IC523 IC555 Q557 Q560 Q555
IC621 Q625 Q620 IC615 Q558 Q562
Q617 Q619 Q618 Q561 Q563

*1

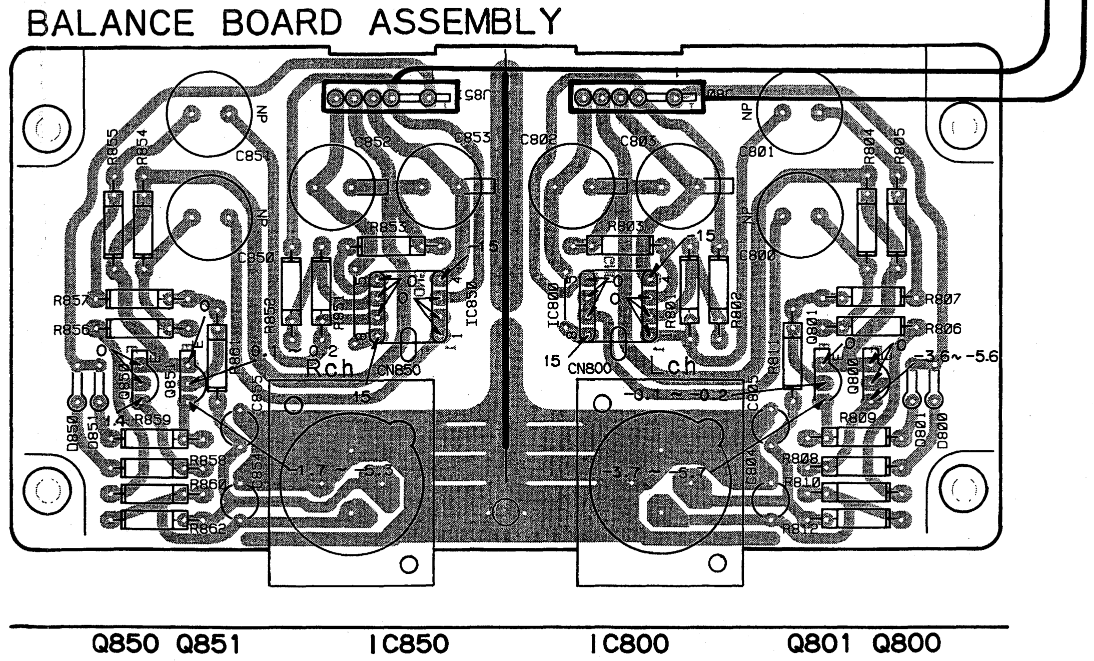
IC522, IC523 (PD2028A)

Pin No.	Voltage	Pin No.	Voltage
1	0	15	5
2	2.6	16	5
3	2	17	5
4	0	18	0
5	5	19	3.8
6	5	20	2.2
7	2.3	21	0
8	2.5	22	0
9	0	23	0
10	5	24	0
11	0	25	3.2
12	2	26	2.5
13	2.6	27	0
14	0	28	5

*2

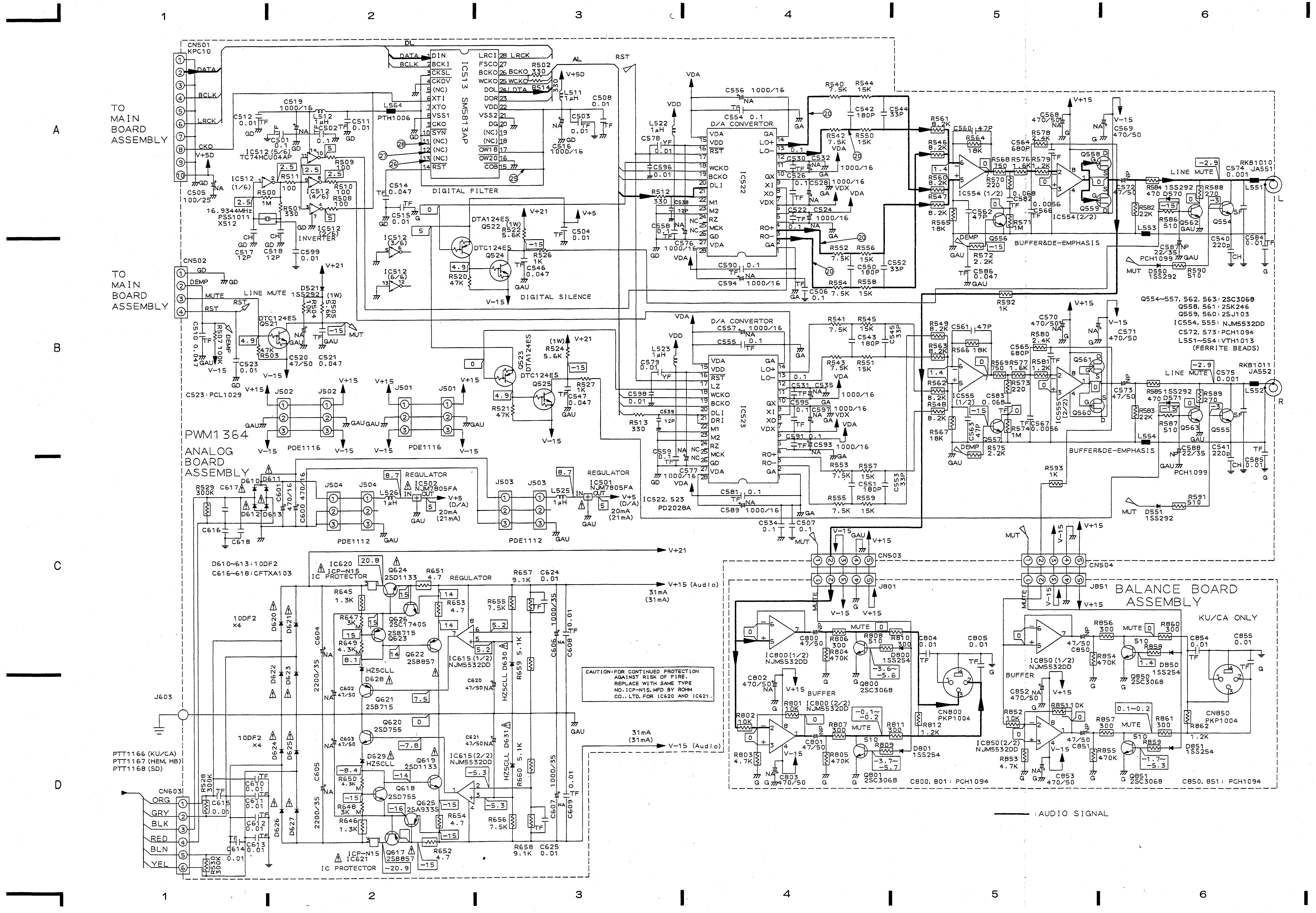
IC513 (SM5813AP)

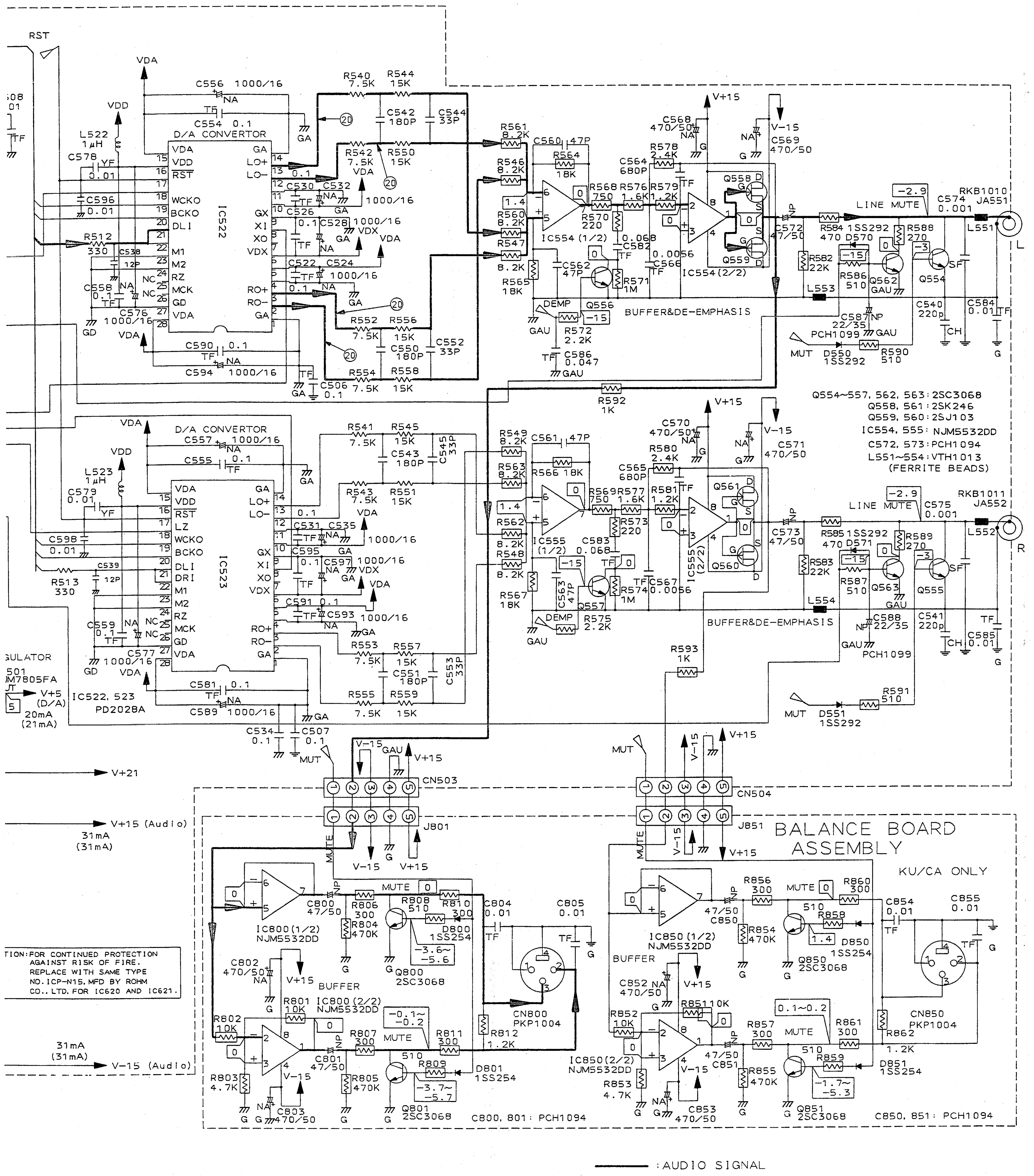
Pin No.	Voltage	Pin No.	Voltage
1	2.5	15	5
2	2.4	16	0
3	5	17	5
4	0	18	0
5	0	19	0
6	2.4	20	2.4
7	2.6	21	0
8	0	22	5
9	2.2	23	1.9
10	5	24	1.9
11	0	25	3.7
12	0	26	2.1
13	0	27	2.5
14	4.8	28	2.5


BALANCE BOARD ASSEMBLY
Rch
Lch
CN850
CN800
Q850 Q851 IC850 IC800 Q801 Q800

P.C.B. pattern diagram indication	Corresponding part symbol	Part name	P.C.B. pattern diagram indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
					Electrolytic capacitor (Noiseless)
		Zenner diode			Electrolytic capacitor (Polarized)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.


TO MAIN BOARD ASSEMBLY
CN501 KPC10
DATA
BCLK
LRCK
CKO
V+5D
TO MAIN BOARD ASSEMBLY
CN502
GD
DEMP
MUTE
RST
LINE MUTE
IC513 SM5813AP
DIGITAL FILTER
DL
AL
RST
16.9344MHz PSS1011 X512
IC512 (5/6) TC74HCU04AP
INVERTER
DIGITAL SILENCE
DTA124ES Q522
DTC124ES Q524
DTC124ES Q521
D/A CONVERTOR
IC522
IC523
IC522, 523 PD2028A
BUFFER&DE-EMPHASIS
IC554 (1/2)
IC554(2/2)
IC555 (1/2)
IC555 (2/2)
LINE MUTE
RKB1010 JA551
RKB1011 JA552
L
R
Q554~557, 562, 563: 2SC3068
Q558, 561: 2SK246
Q559, 560: 2SJ103
IC554, 555: NJM5532DD
C572, 573: PCH1094
L551~554: VTH1013 (FERRITE BEADS)
MUT D550 1SS292
MUT D551 1SS292
PWM1364 ANALOG BOARD ASSEMBLY
C523: PCL1029
J502
J501
PDE1116
J504
J503
PDE1112
REGULATOR IC502 NJM7805FA
REGULATOR IC501 NJM7805FA
+5 (D/A) 20mA (21mA)
D610~613: 10DF2
C616~618: CFTXA103
IC620 ICP-N15 IC PROTECTOR
Q624 2SD1133
REGULATOR
Q626 2SC1740S
Q623 2SB715
Q622 2SB857
Q621 2SB715
IC615 (1/2) NJM5532DD
IC615 (2/2) NJM5532DD
Q620 2SD755
Q619 2SD1133
Q618 2SD755
Q625 2SA933S
Q617 2SB857
IC621 ICP-N15 IC PROTECTOR
D628 HZ5CLL
D629 HZ5CLL
10DF2 x4
V+21
V+15 (Audio) 31mA (31mA)
V-15 (Audio) 31mA (31mA)
J603
GAU
PTT1166 (KU/CA)
PTT1167 (HEM, HB)
PTT1168 (SD)
CN603
ORG
GRY
BLK
RED
BLN
YEL
CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC620 AND IC621.
CN503
CN504
J801
J851
BALANCE BOARD ASSEMBLY
KU/CA ONLY
IC800 (1/2) NJM5532DD
IC800 (2/2) NJM5532DD
BUFFER
MUTE
Q800 2SC3068
Q801 2SC3068
D800 1SS254
D801 1SS254
CN800 PKP1004
C800, 801: PCH1094
IC850 (1/2) NJM5532DD
IC850 (2/2) NJM5532DD
Q850 2SC3068
Q851 2SC3068
D850 1SS254
D851 1SS254
CN850 PKP1004
C850, 851: PCH1094
: AUDIO SIGNAL
1
2
3
4
5
6
A
B
C
D


D/A CONVERTOR
IC522
IC523
IC522, 523 PD2028A
BUFFER&DE-EMPHASIS
IC554 (1/2)
IC554(2/2)
IC555 (1/2)
IC555 (2/2)
LINE MUTE
RKB1010 JA551
RKB1011 JA552
L
R
Q554~557, 562, 563: 2SC3068
Q558, 561: 2SK246
Q559, 560: 2SJ103
IC554, 555: NJM5532DD
C572, 573: PCH1094
L551~554: VTH1013 (FERRITE BEADS)
CN503
CN504
J801
J851
BALANCE BOARD ASSEMBLY
KU/CA ONLY
BUFFER
IC800(1/2) NJM5532DD
IC800 (2/2) NJM5532DD
IC850(1/2) NJM5532DD
IC850(2/2) NJM5532DD
CN800 PKP1004
CN850 PKP1004
C800, 801: PCH1094
C850, 851: PCH1094
V+21
V+15 (Audio)
V-15 (Audio)
31mA (31mA)
TION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE NO. ICP-N15, MFD BY ROHM CO., LTD. FOR IC620 AND IC621.
:AUDIO SIGNAL

1.RESISTORS :
Indicated in Ω, 1/4W, 1/6W and 1/8W, ±5% tolerance unless otherwise noted k ; kΩ, M ; MΩ, (F) ; ±1%, (G) ; ±2%, (K) ; ±10%, (M) ; ±20% tolerance.

2.CAPACITORS :
Indicated in capacity (μF)/voltage(V) unless otherwise noted p ; pF. Indication without voltage is 50 V except electrolytic capacitor.

3.VOLTAGE, CURRENT :
▭ ; DC voltage (V) at play state.
⇦mA ; DC current at play state.
Value in ( ) is DC current at stop state.

4.OTHERS :
➡ ; Signal route.
⊘ ; Adjusting point
The ⚠ mark found on some component parts indicates the inportance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES : (The underlined indicates the switch position)
PRIMARY BOARD ASSEMBLY
S311 POWER

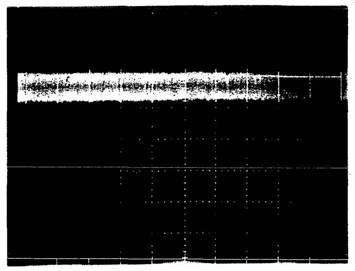
FUNCTION A BOARD ASSEMBLY
S401 ⏭] TRACK SEARCH
S402 ⏮]
S403 PAUSE(⏸)
S404 PLAY(▷)
S405 OPEN/CLOSE(⏏)
S406 STOP(□)

FUNCTION B BOARD ASSEMBLY
S407 DISPLAY OFF
S408 OUTPUT

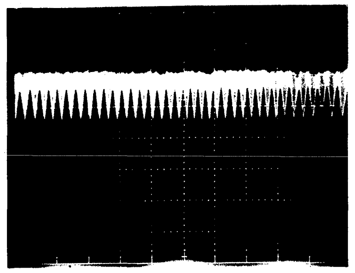
4.3 WAVEFORMS

NOTE : The encircled numbers denote measuring points in the schematic diagram.

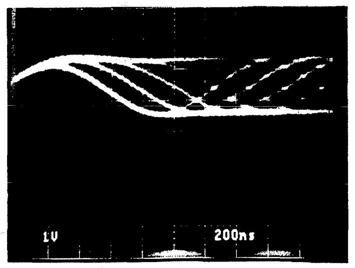
① CN1-5 Pin : PLAY MODE
50mV/div 5msec/div



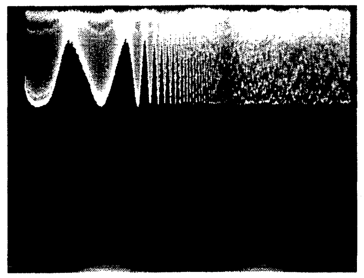
① CN1-5 Pin : SEARCH MODE
50mV/div 5msec/div



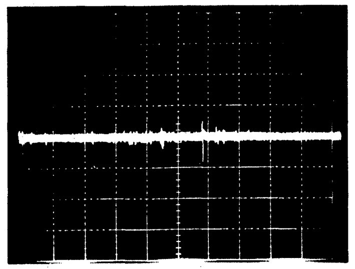
② TP1-1 Pin : PLAY MODE
1V/div 200nsec/div



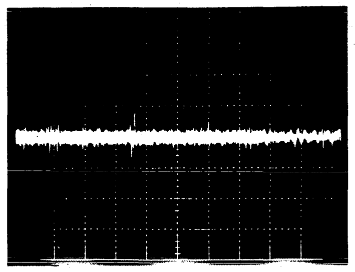
② TP1-1 Pin : SEARCH MODE
500mV/div 5msec/div



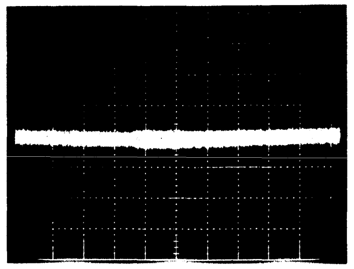
③ TP1-6 Pin : PLAY MODE
500mV/div 10msec/div



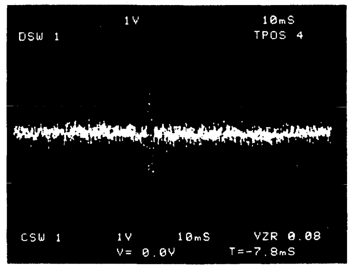
③ TP1-6 Pin : SEARCH MODE
500mV/div 10msec/div



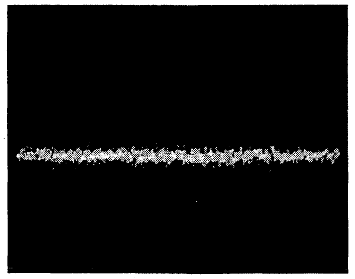
④ TP1-4 Pin : PLAY MODE
1V/div 10msec/div



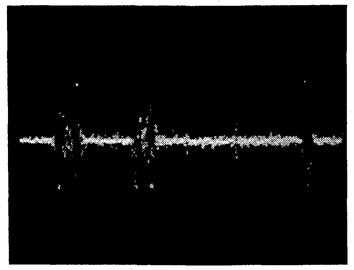
④ TP1-4 Pin : SEARCH MODE
1V/div 10msec/div



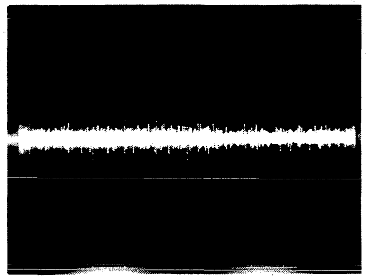
⑤ IC18-1 Pin : PLAY MODE
2V/div 10msec/div



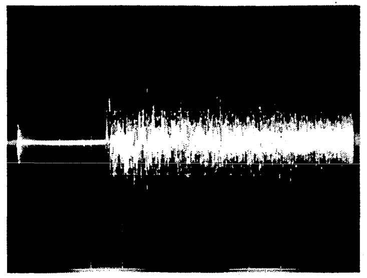
⑤ IC18-1 Pin : SEARCH MODE
5V/div 10msec/div



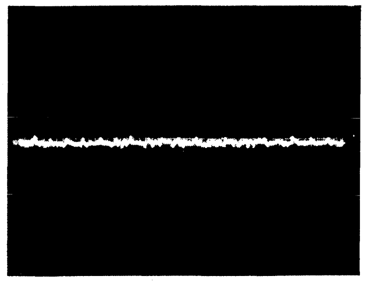
⑥ IC18-9 Pin : PLAY MODE
2V/div 10msec/div



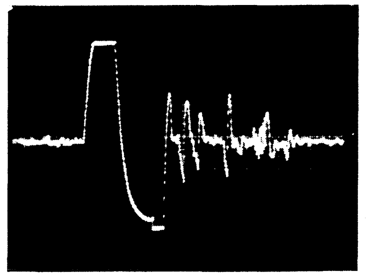
⑥ IC18-9 Pin : SEARCH MODE
2V/div 10msec/div



⑦ IC17-1 : PLAY MODE
2V/div 50msec/div

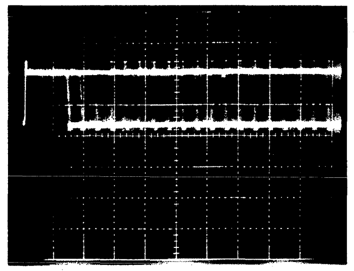


⑦ IC17-1 Pin : SEARCH MODE
2V/div 50msec/div

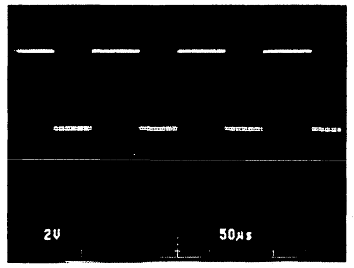


⑧

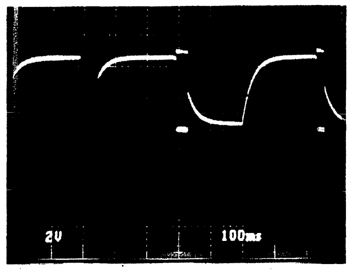
⑨ IC1-27 Pin : PLAY MODE
2V/div 500nsec/div



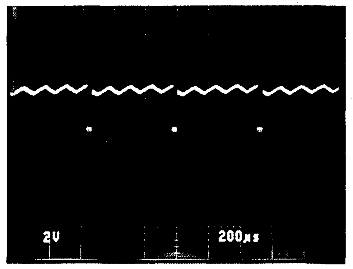
⑩ IC3-4 Pin : PLAY MODE
2V/div 50 μ sec/div



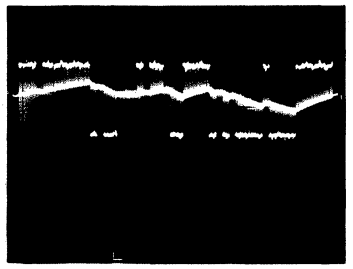
⑩ IC3-4 Pin : SEARCH MODE
2V/div 100msec/div



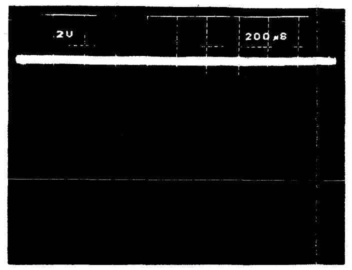
⑪ IC3-3 Pin : PLAY MODE
2V/div 200 μ sec/div



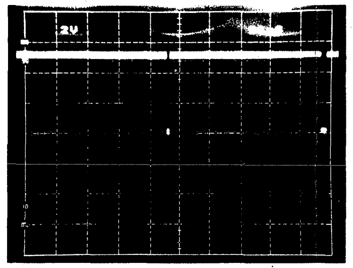
⑪ IC3-3 Pin : SEARCH MODE
2V/div 10msec/div



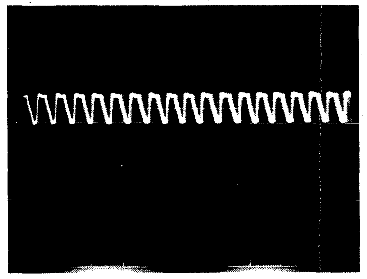
⑫ TP2-1 Pin : PLAY MODE
2V/div 200 μ sec/div



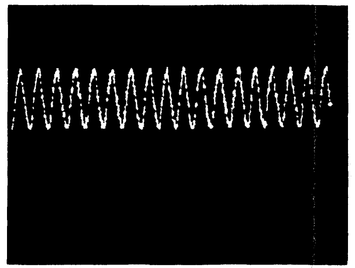
⑫ TP2-1 Pin : SEARCH MODE
2V/div 20msec/div



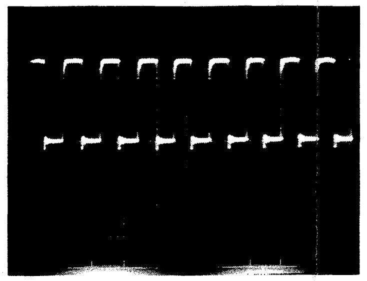
⑬ IC2-38 Pin : PLAY MODE
2V/div 200nsec/div



⑭ IC3-8 Pin : PLAY MODE
2V/div 200nsec/div



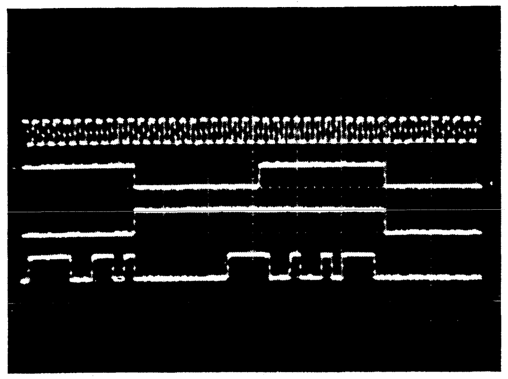
⑮ TP2-2 Pin : PLAY MODE
2V/div 200nsec/div



IC3 (CXD1167Q)

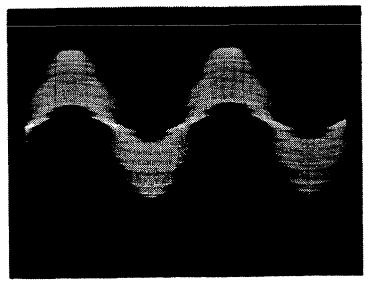
PLAY MODE

⑯BCLK (Pin76)
⑰WDCK (Pin79)
⑱LRCK (Pin80)
⑲DATA (Pin78)

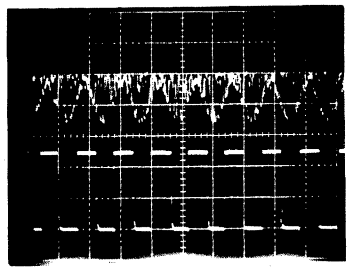


10V/div
2 µ sec/div

⑳ IC522, IC 523-13,12,2,3 Pin :
PLAY MODE (0dB, 1kHz)
2V/div 200 µ sec/div

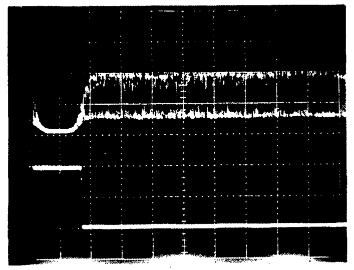


㉓ IC1-22 Pin : TRACKING OPEN
0.1msec/div
Upper TP1-1 Pin : 1V/div
Lower IC1-22 Pin : 2V/div



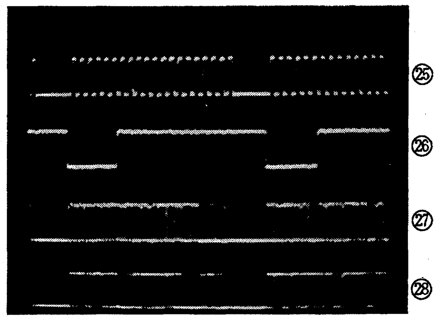
㉔ IC1-21 Pin : DFCT 0.5msec/div

Upper TP1-1 Pin : 1V/div
Lower IC1-21 Pin : 5V/div



IC513 SM 5813 AP
PLAY MODE
5 V/div.

㉕BCKO (Pin 15)
㉖WCKO (Pin 13)
㉗DOL (Pin 12)
㉘DOR (Pin 11)



5. P.C.B.'s PARTS LIST

NOTES :

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

560Ω 56×10^1 *561* .... *RD1/4PS*$\boxed{5}\boxed{6}\boxed{1}$*J*
47kΩ 47×10^3 *473* .... *RD1/4PS*$\boxed{4}\boxed{7}\boxed{3}$*J*
0.5Ω *0R5* .... *RD2H*$\boxed{0}\boxed{R}\boxed{5}$*K*
1Ω *010* .... *RD1P*$\boxed{0}\boxed{1}\boxed{0}$*K*

Ex.2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62kΩ 562×10^1 *5621* .... *RD1/4SR*$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$*F*

◉ANALOG BOARD ASSEMBLY (PWM1364)

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	IC501,IC502	REGULATOR IC	NJM7805FA
	IC512	LOGIC IC	TC74HCU04AP
	IC513	IC	SM5813AP
	IC522,IC523	D/A CONVERTER,IC	PD2028A
	IC554,IC555	OP-AMP IC	NJM5532DD
	IC615	OP-AMP IC	NJM5532DD
⚠	IC620,IC621	IC PROTECTOR	ICP-N15
	Q521	TRANSISTOR	DTC124ES
	Q522,Q523	TRANSISTOR	DTA124ES
	Q524,Q525	TRANSISTOR	DTC124ES
	Q554-Q557	TRANSISTOR	2SC3068
	Q558	TRANSISTOR	2SK246
	Q559,Q560	FET	2SJ103
	Q561	TRANSISTOR	2SK246
	Q562,Q563	TRANSISTOR	2SC3068
⚠	Q617	TRANSISTOR	2SB857
	Q618	TRANSISTOR	2SD755
⚠	Q619	POWER TRANSISTOR	2SD1133
	Q620	TRANSISTOR	2SD755
	Q621	TRANSISTOR	2SB715
⚠	Q622	TRANSISTOR	2SB857
	Q623	TRANSISTOR	2SB715
⚠	Q624	POWER TRANSISTOR	2SD1133
	Q625	TRANSISTOR	2SA933S
	Q626	TRANSISTOR	2SC1740S
	D521	DIODE	1SS292
	D550,D551	DIODE	1SS292
	D570,D571	DIODE	1SS292
⚠	D610-D613	DIODE	10DF2
⚠	D620-D627	DIODE	10DF2
⚠	D628-D631	ZENER DIODE	HZ5CLL

COILS AND FILTERS

Mark	No.	Description	Parts No.
	L511,L512	AXIAL INDUCTOR	LAU010K
	L522,L523	AXIAL INDUCTOR	LAU010K
	L525-L527	AXIAL INDUCTOR	LAU010K
	L551-L554	FERRITE BEADS	VTH1013
	L564		PTH1006

CAPACITORS

Mark	No.	Description	Parts No.
	C501,C502	AUDIO FILM CAPACITOR	CFTXA104J50
	C503,C504	AUDIO FILM CAPACITOR	CFTXA103J50
	C505	ELECTROLYTIC CAPACIT	CENA101M25
	C506,C507	AUDIO FILM CAPACITOR	CFTXA104J50
	C508	AUDIO FILM CAPACITOR	CFTXA103J50
	C510	AUDIO FILM CAPACITOR	CFTXA473J50
	C511,C512	AUDIO FILM CAPACITOR	CFTXA103J50
	C514	AUDIO FILM CAPACITOR	CFTXA473J50
	C515	AUDIO FILM CAPACITOR	CFTXA103J50
	C516	ELECTROLYTIC CAPACIT	CENA102M16
	C517,C518	CERAMIC CAPACITOR	CCCCH120J50
	C519	ELECTROLYTIC CAPACIT	CENA102M16
	C520	ELECTROLYTIC CAPACIT	CENA470M50
	C521	AUDIO FILM CAPACITOR	CFTXA473J50
	C522	AUDIO FILM CAPACITOR	CFTXA104J50
	C523	CERAMIC CAPACITOR	PCL1029
	C524	ELECTROLYTIC CAPACIT	CENA102M16
	C526	AUDIO FILM CAPACITOR	CFTXA104J50
	C528	ELECTROLYTIC CAPACIT	CENA102M16
	C530,C531	AUDIO FILM CAPACITOR	CFTXA104J50
	C532	ELECTROLYTIC CAPACIT	CENA102M16
	C534	AUDIO FILM CAPACITOR	CFTXA104J50
	C535	ELECTROLYTIC CAPACIT	CENA102M16
	C538,C539	CERAMIC CAPACITOR	CCCCH120J50
	C540,C541	CERAMIC CAPACITOR	CCDCH221J50
	C542,C543	MICA CAPACITOR	CMA181J500
	C544,C545	MICA CAPACITOR	CMA330J500
	C546,C547	AUDIO FILM CAPACITOR	CFTXA473J50
	C550,C551	MICA CAPACITOR	CMA181J500
	C552,C553	MICA CAPACITOR	CMA330J500

Mark	No. Description	Parts No.
	C554,C555 AUDIO FILM CAPACITOR	CFTXA104J50
	C556,C557 ELECTROLYTIC CAPACIT	CENA102M16
	C558,C559 AUDIO FILM CAPACITOR	CFTXA104J50
	C560-C563 MICA CAPACITOR	CMA470J500
	C564,C565	CFTXA681J50
	C566,C567	CFTXA562J50
	C568-C571 ELECTROLYTIC CAPACIT	CENA471M50
	C572,C573 ELECTROLYTIC CAPACIT	PCH1094
	C574,C575 PL.STYRENE CAPACITOR	CQSF102J50
	C576,C577 ELECTROLYTIC CAPACIT	CENA102M16
	C578,C579 AUDIO FILM CAPACITOR	CFTXA103J50
	C581 AUDIO FILM CAPACITOR	CFTXA104J50
	C582,C583 AUDIO FILM CAPACITOR	CFTXA683J50
	C584,C585 AUDIO FILM CAPACITOR	CFTXA103J50
	C586 AUDIO FILM CAPACITOR	CFTXA473J50
	C587,C588 ELECTR. CAPACITOR	PCH1099
	C589 ELECTROLYTIC CAPACIT	CENA102M16
	C590,C591 AUDIO FILM CAPACITOR	CFTXA104J50
	C593,C594 ELECTROLYTIC CAPACIT	CENA102M16
	C595 AUDIO FILM CAPACITOR	CFTXA104J50
	C596 CERAMIC CAPACITOR	CKDYF103Z50
	C597 ELECTROLYTIC CAPACIT	CENA102M16
	C598 CERAMIC CAPACITOR	CKDYF103Z50
	C599 AUDIO FILM CAPACITOR	CFTXA103J50
	C600,C601 ELECTROLYTIC CAPACIT	CENA471M16
	C602,C603 ELECTROLYTIC CAPACIT	CENA470M50
	C604,C605 ELECTR. CAPACITOR	PCH1102
	C606,C607 ELECTROLYTIC CAPACIT	CENA102M35
	C608-C618 AUDIO FILM CAPACITOR	CFTXA103J50
	C620,C621 ELECTROLYTIC CAPACIT	CENA470M50
	C624,C625 AUDIO FILM CAPACITOR	CFTXA103J50

RESISTORS

	R505,R522 METAL OXIDE RESISTOR	RS1LMF562J
	R524 METAL OXIDE RESISTOR	RS1LMF562J
	R528-R530 CARBON FILM RESISTOR	RDR1/4PM304J
	R540-R567 CARBON FILM RESISTOR	RDR1/4PM☐☐☐J
	R568-R571 CARBON FILM RESISTOR	RDM1/2P☐☐☐J
	R573,R574 CARBON FILM RESISTOR	RDM1/2P☐☐☐J
	R576-R585 CARBON FILM RESISTOR	RDM1/2P☐☐☐J
	R588-R589 CARBON FILM RESISTOR	RDM1/2P271J
	R590-R593 CARBON FILM RESISTOR	RDM1/2P☐☐☐J
	R645,R646 CARBON FILM RESISTOR	RDR1/4PM132J
	R647-R650 METALFILM RESISTER	RN1/4PQ☐☐☐☐F
	R651-R654 CARBON FILM RESISTOR	RDR1/2PM4R7J
	R655-R660 CARBON FILM RESISTOR	RDR1/4PM☐☐☐J
	Other resistors	RD1/6PM☐☐☐J

OTHERS

	CN501 CONNECTOR(10P)	KPC10
	JA551 1P PIN JACK(W)	RKB1010
	JA552 1P PIN JACK (R)	RKB1011
	X512 XTAL RES (OSC)	PSS1011
	SCREW	IBZ30P100FCC

Mark	No. Description	Parts No.

●MAIN BOARD ASSEMBLY (PWZ1983)

SEMICONDUCTORS

	IC1 PRE AMP IC	CXA1081S
	IC2 SERVO CONTROL IC	CXA1082BS
	IC3 EFM DEMODULATION IC	CXD1167Q
	IC4 MICROCOMPUTER,IC	PD3179B
	IC9 IC	MC74HCU04N
	IC10 SYSTEM RESET IC	M51957AL
⚠	IC11 REGULATOR IC	NJM7805FA
	IC12 REGULATOR IC	NJM7905FA
⚠	IC13 REGULATOR IC	AN7810F
⚠	IC14 REGULATOR IC	AN7910F
	IC15 REGULATOR IC	NJM7812FA
	IC16 REGULATOR IC	NJM7912FA
⚠	IC17-IC19 POWER OP-AMP	TA8410K
⚠	IC21 REGULATOR IC	AN7810F
⚠	IC22 REGULATOR IC	AN7910F
⚠	IC30-IC34 IC PROTECTOR	ICP-N10
	IC181,IC182 IC	NJM072DE
	IC721 REGULATOR IC	NJM78L05A
	Q4 TRANSISTOR	DTC124ES
	Q6 TRANSISTOR	2SC1740S
	Q7 TRANSISTOR	2SA933S
	Q8,Q9 TRANSISTOR	2SC1740SLN
	Q10 TRANSISTOR	2SA1399
	Q20 TRANSISTOR	DTA124ES
	Q21,Q22 TRANSISTOR	DTC124ES
	Q25 TRANSISTOR	DTA124ES
	Q181-Q183 TRANSISTOR	2SC1740SLN
	Q304 TRANSISTOR	2SA1399
	Q701 TRANSISTOR	DTC124ES
⚠	D1	RB-152LF
⚠	D2	D3SBA20
⚠	D5,D6 DIODE	10E2
⚠	D11 ZENER DIODE	HZ27-1/2L
⚠	D12 ZENER DIODE	HZ20-1L
	D146,D147 DIODE	1SS254
	D181-D183 DIODE	1SS254
	D701-D709 DIODE	1SS254
	D720-D723 DIODE	1SS254

COILS AND FILTERS

	DL1,DL2 FILTER	PTF1009
	L3 RADIAL INDUCTOR	LRA010K
	L4 COIL	PTL1003
	L51,L52 AXIAL INDUCTOR	LAU010K
	L701,L702 AXIAL COIL	LAUR22K

CAPACITORS

	C1 AUDIO FILM CAPACITOR	CFTXA472J50
	C2-C4 CERAMIC CAPACITOR	CCCCH300J50
	C5,C7 ELECTROLYTIC CAPACIT	CENA221M25
	C9 CERAMIC CAPACITOR	CGCYF473Z25
	C10 ELECTR.CAPACITOR	CEAS101M10

Mark	No.	Description	Parts No.
	C11	AUDIO FILM CAPACITOR	CFTXA333J50
	C12	ELECTROLYTIC CAPACIT	CENA101M25
	C13	AUDIO FILM CAPACITOR	CFTXA332J50
	C14	AUDIO FILM CAPACITOR	CFTXA103J50
	C15	ELECTROLYTIC CAPACIT	CENA101M25
	C16	ELECTR.CAPACITOR	CEASR47M50
	C17	AUDIO FILM CAPACITOR	CFTXA103J50
	C18	ELECTROLYTIC CAPACIT	CENA471M16
	C21	AUDIO FILM CAPACITOR	CFTXA333J50
	C22	ELECTR.CAPACITOR	CEASR47M50
	C23	ELECTROLYTIC CAPACIT	CENA101M25
	C24,C25	ELECTR.CAPACITOR	CEAS101M25
	C26	ELECTROLYTIC CAPACIT	CENA101M25
	C27	AUDIO FILM CAPACITOR	CFTXA153J50
	C29		CFTXA152J50
	C31,C32	AUDIO FILM CAPACITOR	CFTXA104J50
	C33		CFTXA102J50
	C34	ELECTR.CAPACITOR	CEAS470M10
	C35	AUDIO FILM CAPACITOR	CFTXA104J50
	C36	ELECTROLYTIC CAPACIT	CENA101M25
	C37	AUDIO FILM CAPACITOR	CFTXA473J50
	C38,C41	ELECTROLYTIC CAPACIT	CENA102M16
	C42	AUDIO FILM CAPACITOR	CFTXA124J50
	C43	ELECTR.CAPACITOR	CEAS101M10
	C44	AUDIO FILM CAPACITOR	CFTXA223J50
	C45	AUDIO FILM CAPACITOR	CFTXA104J50
	C46	AUDIO FILM CAPACITOR	CFTXA103J50
	C47	ELECTROLYTIC CAPACIT	CENA101M25
	C48	ELECTR.CAPACITOR	CEAS3R3M50
	C49	AUDIO FILM CAPACITOR	CFTXA472J50
	C50	ELECTROLYTIC CAPACIT	CEAS330M35
	C51		CFTXA102J50
	C52	CERAMIC CAPACITOR	CGCYF473Z25
	C53	MYLOR FILM CAPACITOR	CQMA471J50
	C54	AUDIO FILM CAPACITOR	CFTXA224J50
	C67		CFTXA681J50
	C68	AUDIO FILM CAPACITOR	CFTXA104J50
	C69	ELECTR.CAPACITOR	CEASR33M50
	C70-C73	AUDIO FILM CAPACITOR	CFTXA103J50
	C80	ELECTR.CAPACITOR	CEAS470M50
	C81	CERAMIC CAPACITOR	CKCYF103Z50
	C82	CERAMIC CAPACITOR	CCCSL680J50
	C83	CERAMIC CAPACITOR	CGCYF473Z25
	C84,C85	ELECTR.CAPACITOR	CEAS101M25
	C86	CERAMIC CAPACITOR	CCCCH300J50
	C87	ELECTROLYTIC CAPACIT	CEAS330M35
	C88	ELECTR.CAPACITOR	CEAS101M50
	C90,C91	ELECTROLYTIC CAPACIT	CENA222M35
	C92,C93	ELECTROLYTIC CAPACIT	CENA102M16
	C96,C97	ELECTROLYTIC CAPACIT	CENA221M25
	C98	ELECTR.CAPACITOR	CEAS100M50
	C99	ELECTR.CAPACITOR	CEAS101M50
	C100	ELECTROLYTIC CAPACIT	CENA332M25
	C101	ELECTROLYTIC CAPACIT	CENA222M35
	C102,C103	ELECTROLYTIC CAPACIT	CENA222M16
	C111	ELECTR.CAPACITOR	CEAS101M10
	C113	AUDIO FILM CAPACITOR	CFTXA103J50
	C114	ELECTROLYTIC CAPACIT	CENA470M25
	C115	CERAMIC CAPACITOR	CKCYF103Z50
	C117	CERAMIC CAPACITOR	CCCSL471J50
	C118	AUDIO FILM CAPACITOR	CFTXA473J50
	C119,C127	CERAMIC CAPACITOR	CKCYF103Z50
	C130,C131	CERAMIC CAPACITOR	CKCYF103Z50
	C134	AUDIO FILM CAPACITOR	CFTXA103J50
	C141	CERAMIC CAPACITOR	CCDSL101J50
	C148	ELECTROLYTIC CAPACIT	CENA101M25
	C151	CERAMIC CAPACITOR	CKCYF103Z50
	C152,C153	ELECTROLYTIC CAPACIT	CEAS330M35
	C156,C157	CERAMIC CAPACITOR	CKCYF103Z50
	C161,C164	CERAMIC CAPACITOR	CKCYF103Z50
	C166,C167	CERAMIC CAPACITOR	CKCYF103Z50
	C181	ELECTR.CAPACITOR	CEAS101M25
	C182	AUDIO FILM CAPACITOR	CFTXA103J50
	C183	AUDIO FILM CAPACITOR	CFTXA332J50
	C184	CERAMIC CAPACITOR	CCCSL101J50
	C185,C186	ELECTROLYTIC CAPACIT	CEAS330M35
	C187	AUDIO FILM CAPACITOR	CFTXA332J50
	C188	CERAMIC CAPACITOR	CCCSL150J50
	C191	CERAMIC CAPACITOR	PCL1029
	C193-C198	CERAMIC CAPACITOR	PCL1029
	C701	CERAMIC CAPACITOR	CKCYF103Z50
	C702	CERAMIC CAPACITOR	CCCSL101J50
	C704	CERAMIC CAPACITOR	CCCSL100D50
	C720	CERAMIC CAPACITOR	CGCYF473Z25
	C721		PCH1062
	C722	CERAMIC CAPACITOR	CKCYF103Z50

RESISTORS

Mark	No.	Description	Parts No.
	VR2	SEMI-FIXED RESISTOR	VRTB6VS103
	VR3-VR7	VR	VRTB6VS223
	VR8	VR	VRTS6VS102
	VR9	VR	VRTB6VS473
	VR10	VR	VRTS6VS472
	R1-R8	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R14	CARBON FILM RESISTOR	RDR1/2PM220J
	R30	METAL FILM RESISTOR	RN1/6PQ3601F
	R31,R32	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R53	CARBON FILM RESISTOR	RDR1/4PM104J
	R58,R59	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R61	CARBON FILM RESISTOR	RDR1/4PM222J
	R66-R69	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R84,R86	CARBON FILM RESISTOR	RDR1/2PM□□□J
	R90,R114	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R117	CARBON FILM RESISTOR	RDR1/4PM102J
	R119-R121	CARBON FILM RESISTOR	RDR1/4PM□□□J
	R131,R132	CARBON FILM RESISTOR	RDR1/4PM102J
	R178	CARBON FILM RESISTOR	RDR1/4PM471J
		Other resistors	RD1/6PM□□□J

OTHERS

Mark	No.	Description	Parts No.
	CN1		52045-1710
	CN2		5597-05CPB

Mark	No.	Description	Parts No.
	CN6	CONNECTOR	HLEM25R
	JA2	JACK	PKB1004
	JA3	OPTICAL OUTPUT JACK	TOTX178
	JA701	JACK	RKN1004
	JA702	JACK	RKN1004
	JA703	JACK	RKN1014
	X1	CERAMIC RESONATOR	RSS1033

PRIMARY BOARD ASSEMBLY

SWITCH

Mark	No.	Description	Parts No.
⚠	S311	SWITCH (POWER)	PSA-009

FILTER

Mark	No.	Description	Parts No.
⚠	L311	FILTER	PTL1002

CAPACITORS

Mark	No.	Description	Parts No.
⚠	C311-C313	CAPACITOR (CERAMIC)	VCG-048

FUNCTION B BOARD ASSEMBLY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	D403	LED	SLH-34YC3H3
	D404,D405	LED	SLH-34VC3H3

SWITCHES

Mark	No.	Description	Parts No.
	S407,S408	SWITCH (DISPLAY OFF, OUTPUT)	PSG-065

CAPACITORS

Mark	No.	Description	Parts No.
	C410,C411	AXIAL CERAMIC C.	CCPUCH100J50

RESISTOR

Mark	No.	Description	Parts No.
	R414	CARBON FILM RESISTOR	RD1/6PM104J

●FUNCTION A BOARD ASSEMBLY (PWZ2000)

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	IC401	FL MCU	PDG036
	Q401	TRANSISTOR	2SC1740S
	Q402-Q406	TRANSISTOR	DTA124ES
	D401	LED	AA0045
	D402	LED	BR0045

SWITCHES

Mark	No.	Description	Parts No.
	S401-S406	SWITCH (TRK FF, TRK REV, PAUSE PLAY, OPEN/CLOSE, STOP)	PSG-065

COILS

Mark	No.	Description	Parts No.
	L401	AXIAL INDUCTOR	LAU010K
	L402	AXIAL INDUCTOR	LAU010K

CAPACITORS

Mark	No.	Description	Parts No.
	C401	ELECTROLYTIC CAPACIT	CEJA330M16
	C402	AUDIO FILM CAPACITOR	CFTXA103J50
	C403	CERAMIC CAPACITOR	CGCYF473Z25
	C404-C409	AXIAL CERAMIC C.	CCPUCH100J50
	C412	CERAMIC CAPACITOR	CKCYF103Z50

RESISTORS

Mark	No.	Description	Parts No.
	R408	RESISTOR ARRAY (47K)	RA10S473J
		Other resistors	RD1/6PM□□□J

OTHERS

Mark	No.	Description	Parts No.
	CN401	CONNECTOR	HLEM25R
	V401	FL TUBE	PEL1025
	X401	CERAMIC RESONATOR	VSS1014
		REMOTE SENSOR	SBX1610

BALANCE BOARD ASSEMBLY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	IC800,IC850	OP-AMP IC	NJM5532DD
	Q800,Q801	TRANSISTOR	2SC3068
	Q850,Q851	TRANSISTOR	2SC3068
	D800,D801	DIODE	1SS254
	D850,D851	DIODE	1SS254

CAPACITORS

Mark	No.	Description	Parts No.
	C800,C801	ELECTROLYTIC CAPACIT	PCH1094
	C802,C803	ELECTROLYTIC CAPACIT	CENA471M35
	C804,C805	AUDIO FILM CAPACITOR	CFTXA103J50
	C850,C851	ELECTROLYTIC CAPACIT	PCH1094
	C852,C853	ELECTROLYTIC CAPACIT	CENA471M35
	C854,C855	AUDIO FILM CAPACITOR	CFTXA103J50

RESISTORS

Mark	No.	Description	Parts No.
	R801-R807	CARBON FILM RESISTOR	RDM1/2P□□□J
	R808,R809	CARBON FILM RESISTOR	RDR1/4PM511J
	R810-R812	CARBON FILM RESISTOR	RDM1/2P□□□J
	R851-R857	CARBON FILM RESISTOR	RDM1/2P□□□J
	R858,R859	CARBON FILM RESISTOR	RDR1/4PM511J
	R860-R862	CARBON FILM RESISTOR	RDM1/2P□□□J

6. ADJUSTMENTS

Perform the following adjustments in the indicated order.

● Adjustments

1. Tracking error offset, focus error offset and RF offset adjustment.
2. Tracking return offset adjustment.
3. Focus lock and spindle lock check.
4. Grating adjustment.
5. Tracking balance adjustment.
6. Tangential adjustment
7. Radial adjustment
8. RF level check
9. Focus gain adjustment
10. Tracking gain adjustment
11. VCO free–running frequency adjustment
12. Method of focus error check

● Measuring Devices

1. Dual–trace oscilloscope
2. Light power meter
3. YEDS–7 test disc
4. Focus and tracking adjustment filter
5. Loop gain adjustment band–pass filter
6. Signal generator
7. Grating driver
8. General–use tools
9. Commercial available disc (8 cm and 12 cm)
10. Hex. wrenchdriver (GGK 1002, 1.5 mm)

● About the test mode

How to activate and release the test mode

① To activate the test mode, turn ON the power switch with the test mode jumper short-circuited.

② The test mode is released by turning the power switch OFF.

The functions of the keys in the test mode are outlined in Table 1.

● Adjustment Volume Name

VR2: RF offset (RF. OF)
VR3: Focus gain (FO. GA)
VR4: Tracking gain (TR. GA)
VR5: Tracking balance (TR. BL)
VR6: Focus error offset (FO. OF)
VR7: Tracking error offset (TE. OF)
VR8: VCO frequency counter (VCOA)
VR9: Tracking return offset (TR. OF)
VR10 : RF level (RF.LEV)

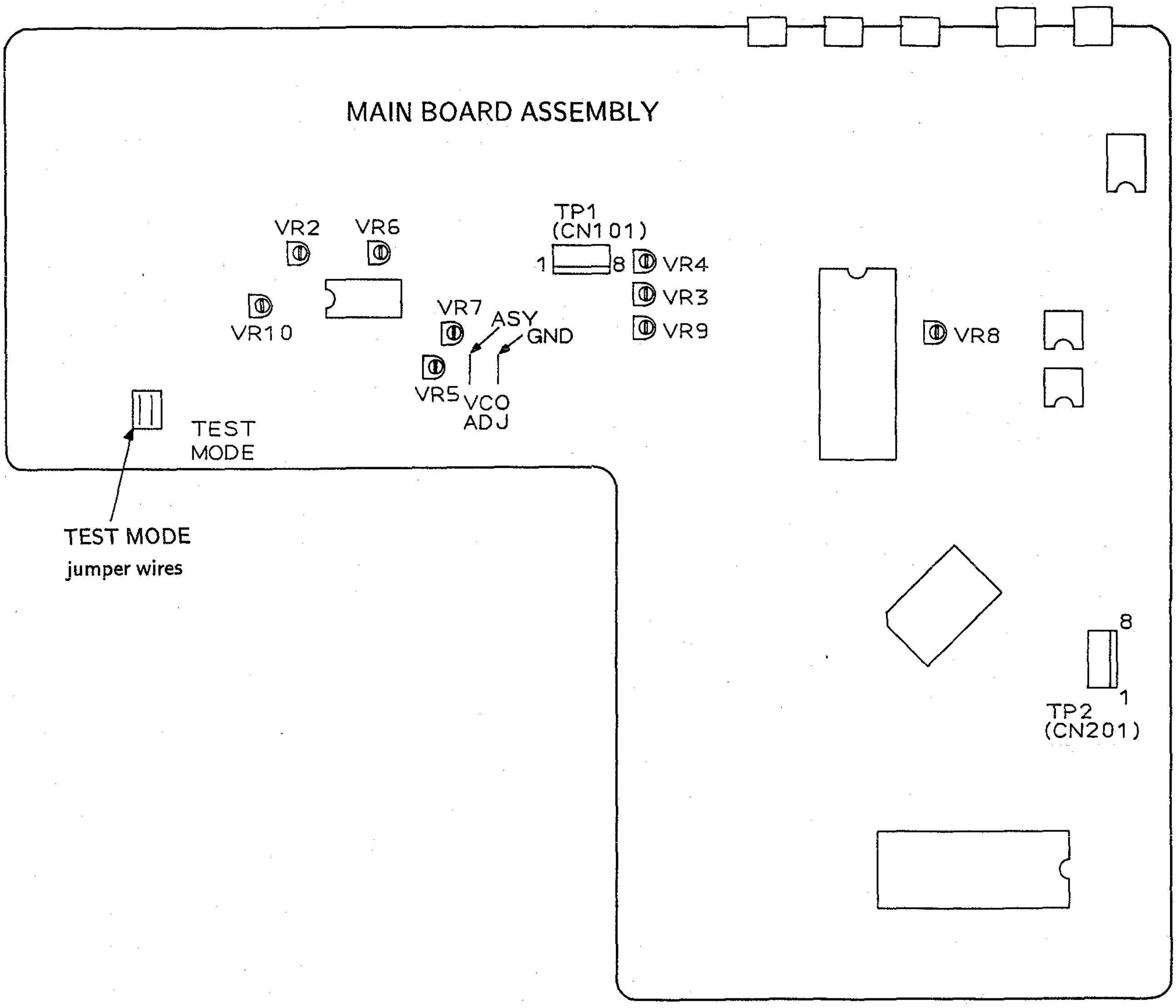
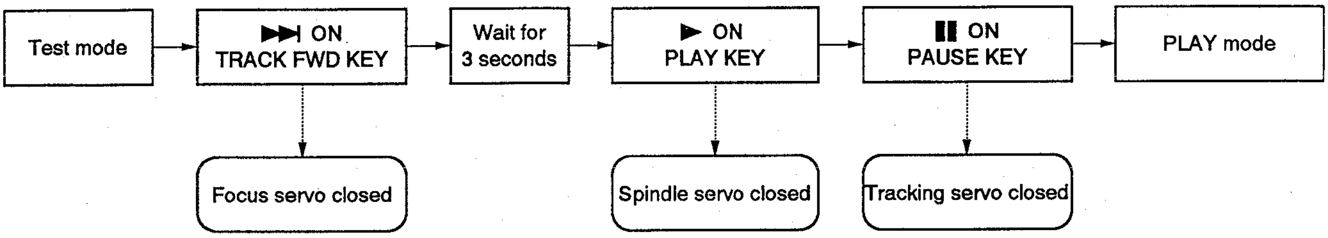

MAIN BOARD ASSEMBLY
TP1
(CN101)
1
8
VR2
VR6
VR4
VR3
VR9
VR10
VR7
ASY
GND
VR5
VCO
ADJ
VR8
TEST
MODE
TEST MODE
jumper wires
8
1
TP2
(CN201)

Fig.1 Adjusting point

In the test mode, closing and opening of servos is performed independently. Therefore, to set the play mode the servos have to be closed in (serial) sequence. Remember that in the test mode the play mode can't be set simply by pressing PAUSE (❚❚) key.

For example, to set the play mode from the stop mode, press the following keys in the indicated order.



* In the test mode, servos keep a serial sequence.

● Function of Each Key in the Test Mode

Symbol	Key name	Function during test mode	Description
⏭	TRACK FWD	Focus servo close	Lights the laser diode and sets the focus actuator UP/DOWN to close the focus servo.
▶	PLAY	Spindle servo close	After kicking the spindle motor, it closes the servo in the CLV–H mode.
❚❚	PAUSE	Tracking servo close/open	Performs a toggle operation. When pressed, the tracking servo is closed and the unit enters the play mode (the focus servo and spindle servo should be already closed). At this time the PAUSE indicator lights. If pressed again, the tracking servo opens.
	OUTPUT	Carriage reverse (inward)	Moves the carriage inwards at high (approx. 1 cm/s) speed. Since there is no safety device to stop the carriage, be sure to stop it manually in time.
	DISPLAY	Carriage forward (outward)	Moves the carriage outwards at high (approx. 1 cm/s) speed. Since there is no safety device to stop the carriage, be sure to stop it manually in time.
■	STOP	Stop	Stops all servos and returns the unit to the initial condition.
⏏	OPEN/CLOSE	(Disc tray) open/close	Opens and closes the disc tray. However, the pickup does not return to the rest position when the tray is opened. It does not move either when the tray is closed.

Table 1.

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
1	**Tracking error offset, focus error offset and RF offset adjustment**					
						● Set the test mode. (*)
		TP1	TP1 Pin 4 (TR. ER)	VR7 (TE. OF)	0V ± 50 mV	● Adjust VR7 (TE. OF: tracking error offset) so that the voltage at Pin 4 (TE: tracking error) of TP1 becomes 0V ± 50 mV.
		TP1	TP1 Pin 6 (FO. ER)	VR6 (FO.OF)	0V ± 50 mV	● Adjust VR6 (FO. OF: focus error offset) so that the voltage at Pin 6 (FO. ER: focus error) of TP1 becomes 0V ± 50 mV.
		TP301	TP 1 Pin 1 (RF)	VR2 (RF. OF)	100 mV ± 50 mV	● Adjust VR2 (RF. OF: RF offset) so that RF output voltage at Pin 1 of TP 1 becomes 100 mV ± 50 mV.
2	**Tracking return offset adjustment**					
						● Set the test mode. (*)
		TP1	TP1 Pin 2 (TR. RT)	VR9 (TR. OF)	0V ± 10 mV	● Adjust VR9 (TR. OF: tracking return offset) so that the voltage at Pin 2 TR. RT (tracking return) of TP1 becomes 0V ± 10 mV.
3	**Focus lock and spindle lock check**					
						● Load the disc. ● Set the test mode. (*) ● Move the pickup close to the center of the disc using DISPLAY Key. Be sure to perform this operation.
	V 0.5V/div	H 100 msec /div	TP 1 Pin 1 (RF output)		RF output	● Observe Pin 1 RF (RF output) of TP 1 with an oscilloscope and confirm that RF signal is output after pressing TRACK FWD key (▶▶|).
					Clockwise rotation	● Press PLAY key (▶) and confirm that the disc rotates clockwise at approx. normal speed (about 300 rpm around the center of the disc), without running wildly or in reverse direction.

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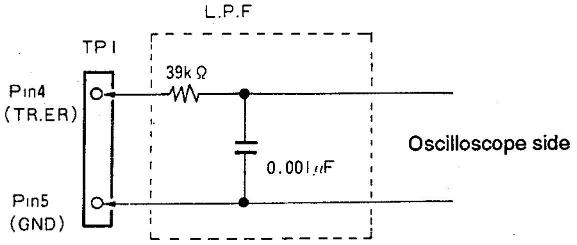
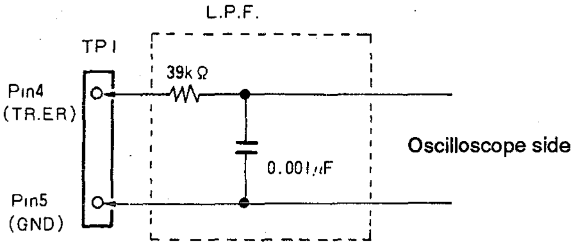
* See page 39.

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
4–1	**Grating adjustment (1) (with an 8 cm disc)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Grating	Null point	● This adjustment can be performed with an 8 cm disc having pits over a 75 mm in diameter. ● Load the disc. (8 cm) ● Set the test mode. (*) ● Press TRACK FWD (▶▶I) and PLAY (▶) keys in that order to close the focus and spindle servos (the tracking servo is open state.) ● Press DISPLAY key and move the pickup to the outer track of the 8 cm disc. When moving the pickup, it is possible to insert a slotted screwdriver in the grating adjustment plate slot from above the unit. (Fig. 3.) ● Observe the waveform at Pin 4 TR. ER (tracking error) of TP1 with an oscilloscope and at this time, insert cut off 4 kHz low–pass filter (Fig. 2). ● Insert the tracking driver in the adjustment slot and turn it so as to find out the null point (Photo–1).
	 L.P.F TP I Pin4 (TR.ER) Pin5 (GND) 39k Ω 0.001μF Oscilloscope side Fig. 2.					

* See page 39.

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
4–2	**Grating adjustment (2) (with an 12 cm disc playing more than 60 minutes)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Grating	Null point	● Load the disc (playing more than 60 minutes). ● Set the test mode. (*) ● Press TRACK FWD (⏭) and PLAY (▶) keys in that order to close the focus and spindle servos (the tracking servo is open state). ● Press DISPLAY key and move the pickup to the outer track of the disc. When moving the pickup, it is possible to insert a slotted screwdriver in the grating adjustment plate slot from above the unit. (Fig. 3.) ● Observe the waveform at Pin 4 TR. ER (tracking error) of TP1 with an oscilloscope and at this time, insert cut off 4 kHz low-pass filter. (Fig. 2.) ● Insert the tracking driver in the adjustment slot and turn it so as to find out the null point (Photo–1).
	 L.P.F. TP1 Pin4 (TR.ER) 39kΩ 0.001μF Pin5 (GND) Oscilloscope side Fig. 2.					
				Grating	Maximum amplitude	● Turn the grating driver slowly clockwise from the null point and set to at the first point where the waveform amplitude (tracking error signal) is maximum. (See photo–2)

* See page 39.

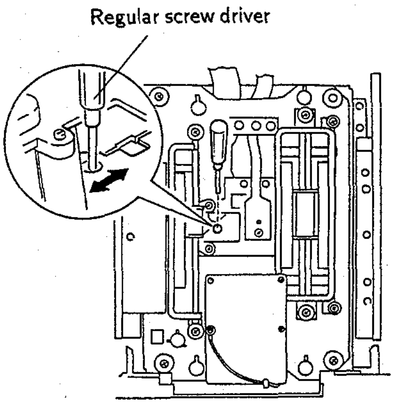
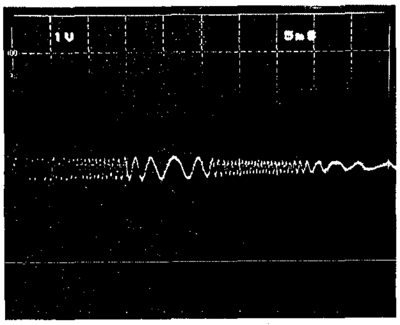
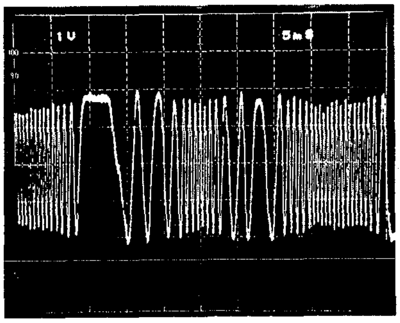

Regular screw driver

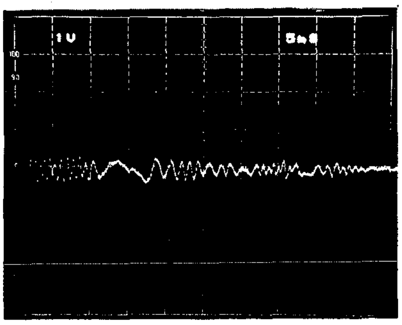
Fig. 3. Grating Adjustment



Photo–1 Null point

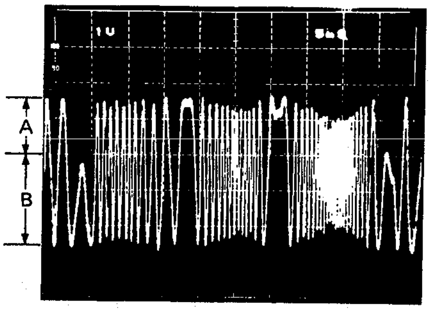


Photo–2 Maximum amplitude

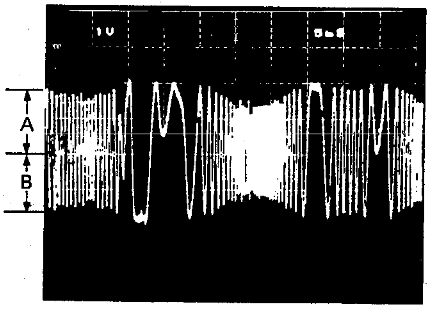


Photo–3 Out of null point

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
5	**Tracking balance adjustment**					
	0.5V/div	5 msec/div	TP1 Pin 4 (TR. ER)	VR5 (TR. BL)		● Load the disc. ● Set the test mode. (*) ● Press DISPLAY key and move carriage close to the center track of the disc. ● Press TRACK FWD (▶▶I) and PLAY (▶) keys in that order to turn the disc. ● Observe Pin 4 TR. ER (tracking error) of TP1 with an oscilloscope. And adjust VR5 TR. BL (tracking balance) so as to remove DC elements from the tracking error waveform.



Photo–6



Photo–7

* See page 39.

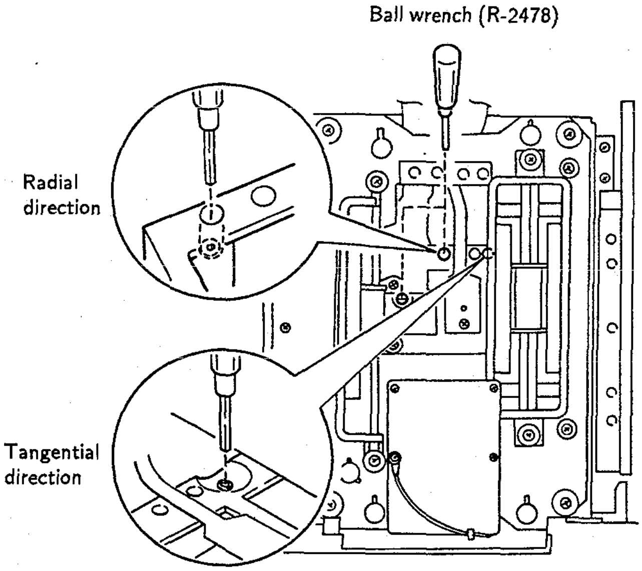
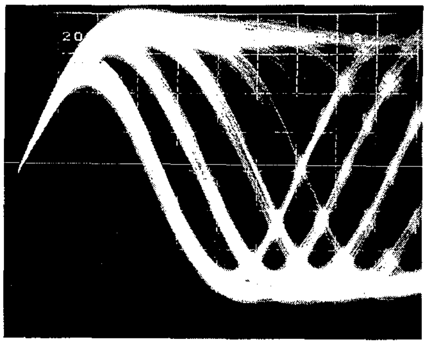
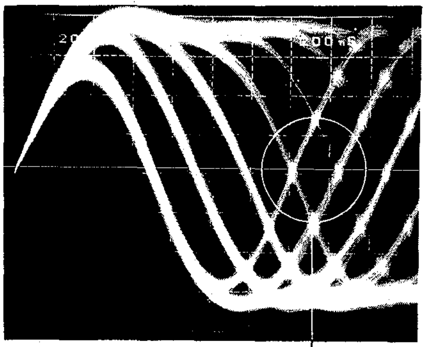

Ball wrench (R-2478)
Radial direction
Tangential direction

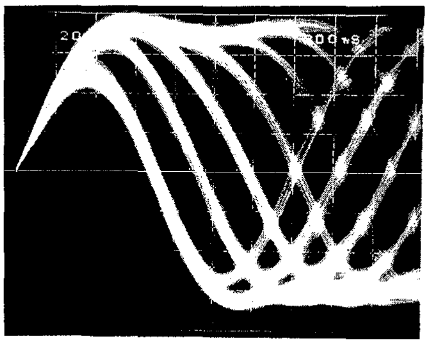
Fig. 4. Tangential Adjustment



Photo–8

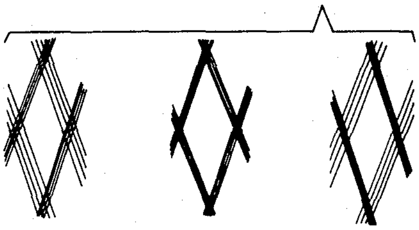


Photo–9

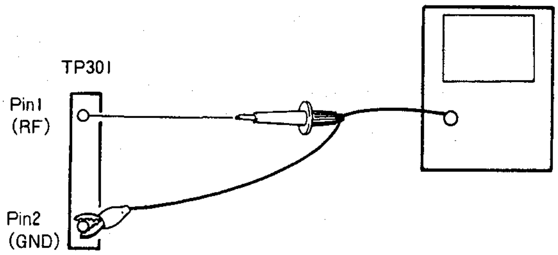


Photo–10

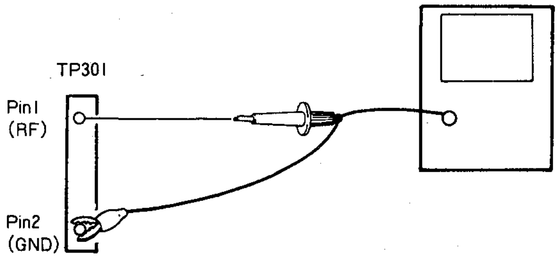
Part to be observed



NG Optimum NG

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
6	**Tangential adjustment**					
			TP 1 Pin 1 (RF output)	Tangential adjustment screw	Eye pattern optimum point	● Load the disc. ● Set the test mode. (*) ● Press DISPLAY key and move the pickup to the center track of the disc (set it to such a location that the tangential screw can be seen from above the servo mechanism. (See fig. 4.) ● Press TRACK FWD (▶▶|), PLAY (▶) and PAUSE (❚❚) keys in that order to close all servos. (Pause indicator lights.) ● Observe Pin 1 RF (RF output) of TP 1 with an oscilloscope and adjust the tangential screw so that the eye pattern becomes clear. (Fig. 4.) ● The adjustment point is located around the middle location between the point where the eye pattern becomes blurred when turning the tangential screw clockwise and the point where the eye pattern becomes blurred when turning the adjustment screw counterclockwise. Observe the overall clearness of the waveform and one of the diamond shapes in the eye pattern (photo–9). Optimum adjustment is attained at the point where diamond shape lines are relatively thin.  Fig. 5

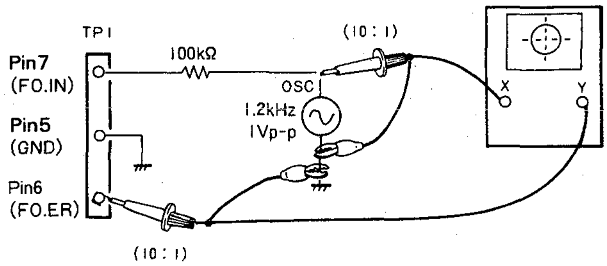
* See page 39.

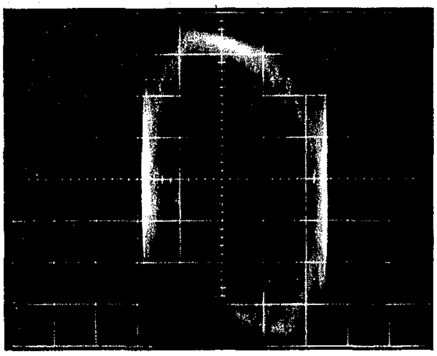
Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
7	**Radial adjustment**					
			TP 1 Pin 1 (RF output)	Radial adjustment screw	Eye pattern optimum point	● Load the disc. ● Set the test mode. (*) ● Press DISPLAY key and move the pickup to the center track of the disc (set it to such a location that the tangential screw can be seen from above the servo mechanism. (See fig. 4.) ● Press TRACK FWD (▶▶I), PLAY (▶) and PAUSE (❚❚) keys in that order to close all servos. (Pause indicator lights.) ● Observe Pin 1 RF (RF output) of TP 1 with an oscilloscope and adjust the tangential screw so that the eye pattern becomes clear. (Fig. 4.) ● The adjustment point is located around the middle location between the point where the eye pattern becomes blurred when turning the tangential screw clockwise and the point where the eye pattern becomes blurred when turning the adjustment screw counterclockwise. Observe the overall clearness of the waveform and one of the diamond shapes in the eye pattern (photo–9). Optimum adjustment is attained at the point where diamond shape lines are relatively thin. ● Perform the tangential and radial adjustments alternately two or more times.  Fig. 5

* See page 39.

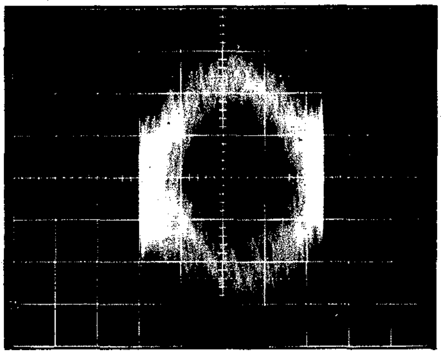
Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
8	**RF level check**					
			TP 1 Pin 1 (RF)	Check	$1.5V^{+0.2V}_{-0V}$	● Set the test mode. (*) ● Connect the probe of the oscilloscope to Pin 1 RF (RF output) of TP 1 . ● Play back the disc, measure the RF waveform p–p voltage and confirm that it becomes $1.5V^{+0.2V}_{-0V}$.
			TP 1 Pin 1 (RF)	VR 10	$1.5V^{+0.2V}_{-0V}$	● Adjust VR 10 if the voltage does not become $1.5V^{+0.2V}_{-0V}$.

* See page 39.

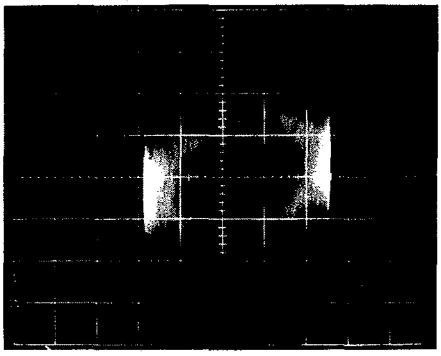
Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
9	**Focus gain adjustment**					
	CH1 (X) , CH2 (Y) 20 mV/div, 5 mV/div (probe 10:1)		X axis: TP1 Pin 5 (FO. IN) Y axis: TP1 Pin 6 (FO. ER)	VR3 (FO. GA)	Phase difference 90°	● With the power off, connect the oscilloscope and the oscillator as shown in Fig. 6. ● Set the normal playback mode. ● Turn the oscillators power on and set it to output a 1.2 kHz, 1 Vp–p signal. **Note:** (Some oscillators output DC when turned ON. In that case, connect the oscillator after turning it on.) ● Adjust VR3 FO. GA (focus gain) so that the resurge waveform on an oscilloscope becomes a horizontal circle (phase difference 90°).  TP1 Pin7 (FO.IN) Pin5 (GND) Pin6 (FO.ER) 100kΩ OSC 1.2kHz 1Vp-p (10 : 1) (10 : 1) X Y Fig. 6.



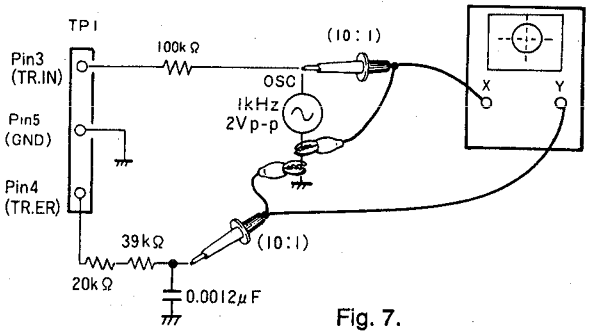
High gain
Photo–11

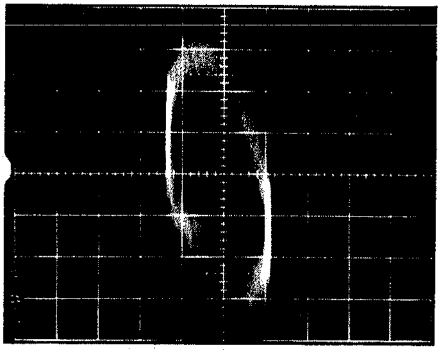


Optimum gain
Photo–12

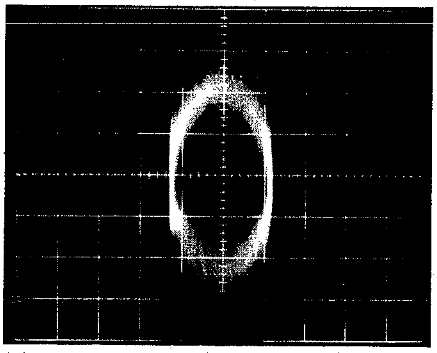


Low gain
Photo–13

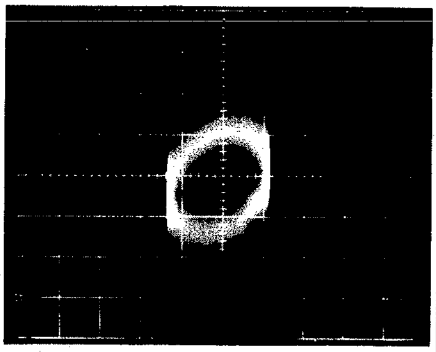
Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
10	**Tracking gain adjustment**					
	CH1 (X), CH2 (Y) 50 mV/div, 5 mV/div (Probe 10:1)		X axis: TP1 Pin 3 (TR. IN) Y axis: TP1 Pin 2 (TR. ER)	VR4 (TR. GA)	Phase difference 90 °	● With the power off, connect the oscilloscope and the oscillator as shown in Fig. 7. ● Set the normal playback mode. ● Turn the oscillators power on and set it to output a 1 kHz, 2 Vp–p signal. **Note:** (Some oscillators output DC when turned on. In that case, connect the oscillator after turning it on.) ● Adjust VR4 TR. GA (tracking gain) so that the resurge waveform on an oscilloscope becomes a horizontal circle (phase difference 90 °).  TP I Pin3 (TR.IN) Pin5 (GND) Pin4 (TR.ER) 100k Ω (10 : 1) OSC 1kHz 2Vp-p X Y 39kΩ (10:1) 20k Ω 0.0012μF Fig. 7.



High gain
Photo–14



Optimum gain
Photo–15

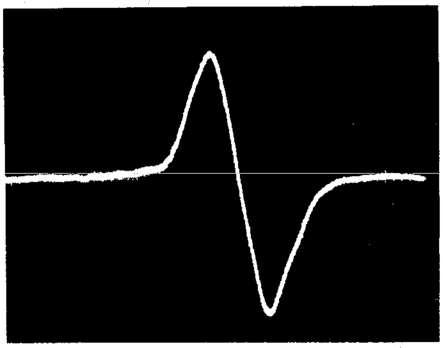


Low gain
Photo–16

11	**VCO free–running frequency adjustment**					
			TP 2 Pin 2		Frequency 4.275 MHz ± 0.025 MHz	● Set the test mode. (*) ● Short the ASY and GND jumpers by using a slotted screw driver or similar. ● Connect the frequency counter (10 MHz range) to Pin 2 of TP 2. ● Adjust VR8 (VCO. A) so that the frequency counter reads 4.275 MHz ± 0.025 MHz. **Note:** Adjust with the stop mode.

* See page 39.

Step No.	Oscilloscope setting		Test points	Adjusting points	Check items/ adjustment specifications	Adjustment procedure
	V	H				
12	**Focus error check**					
	1V/div	2 ms/div	TP1 Pin 6 (FO. ER)	Check	Waveform	● Set the test mode. (*) ● Connect Pin 7 FO. IN (focus in) of TP1 to GND. ● Press TRACK FWD key and check the waveform on Pin 6 FO. ER (focus error) of TP1 with the oscilloscope.



Focus error
Photo–17

* See page 39.

6. RÉGLAGES

Effectuer les réglages suivants dans l'ordre indiqué.

● Réglages

1. Réglage du décalage d'erreur d'alignement, du décalage d'erreur de mise au point et du décalage RF (fréquence radio).
2. Réglage du décalage de retour d'alignement.
3. Contrôle du verrouillage de mise au point et du verrouillage d'axe.
4. Réglage du filtre.
5. Réglage de l'équilibre d'alignement.
6. Réglage tangentiel.
7. Réglage radial.
8. Contrôle du niveau RF (fréquence radio)
9. Réglage du gain de mise au point
10. Réglage du gain d'alignement
11. Réglage de la fréquence de relaxation du VCO (oscillateur à fréquence réglée par variation de tension)
12. Méthode de contrôle d'erreur de mise au point

● Appareils de Mesure

1. Oscilloscope à double trace
2. Indicateur de puissance lumineuse
3. Disc d'essai YEDS-7
4. Filtre de réglage de mise au point et d'alignement
5. Filtre passe-bande de réglage de gain de boucle
6. Générateur de signal
7. Excitateur de filtre
8. Outils à usage général
9. Disc disponible dans le commerce (8 cm et 12 cm)
10. Clé hex. (GGK 1002, 1.5 mm)

● Apropos du mode d'essai

Mise en/hors service du mode d'essai

① Pour activer le mode d'essai, mettre l'interrupteur d'alimentation sous tension en court-circuitant le cavalier de mode d'essai.

② Le mode d'essai est annulé en ramenant l'interrupteur d'alimentation sur OFF.

Les fonctions des touches en mode d'essai sont décrites au Tableau 1.

● Nom des Résistances Variables de Réglage

VR2:	Décalage RF (RF. OF)
VR3:	Gain de mise au point (FO. GA)
VR4:	Gain d'alignement (TR. GA)
VR5:	Equilibre d'alignement (TR. BL)
VR6:	Décalage d'erreur de mise au point (FO. OF)
VR7:	Décalage d'erreur d'alignement (TE. OF)
VR8:	Compteur de fréquence VCO (VCOA)
VR9:	Décalage de retour d'alignement (TR. OF)
VR 10 :	Niveau RF (RF.LEV)

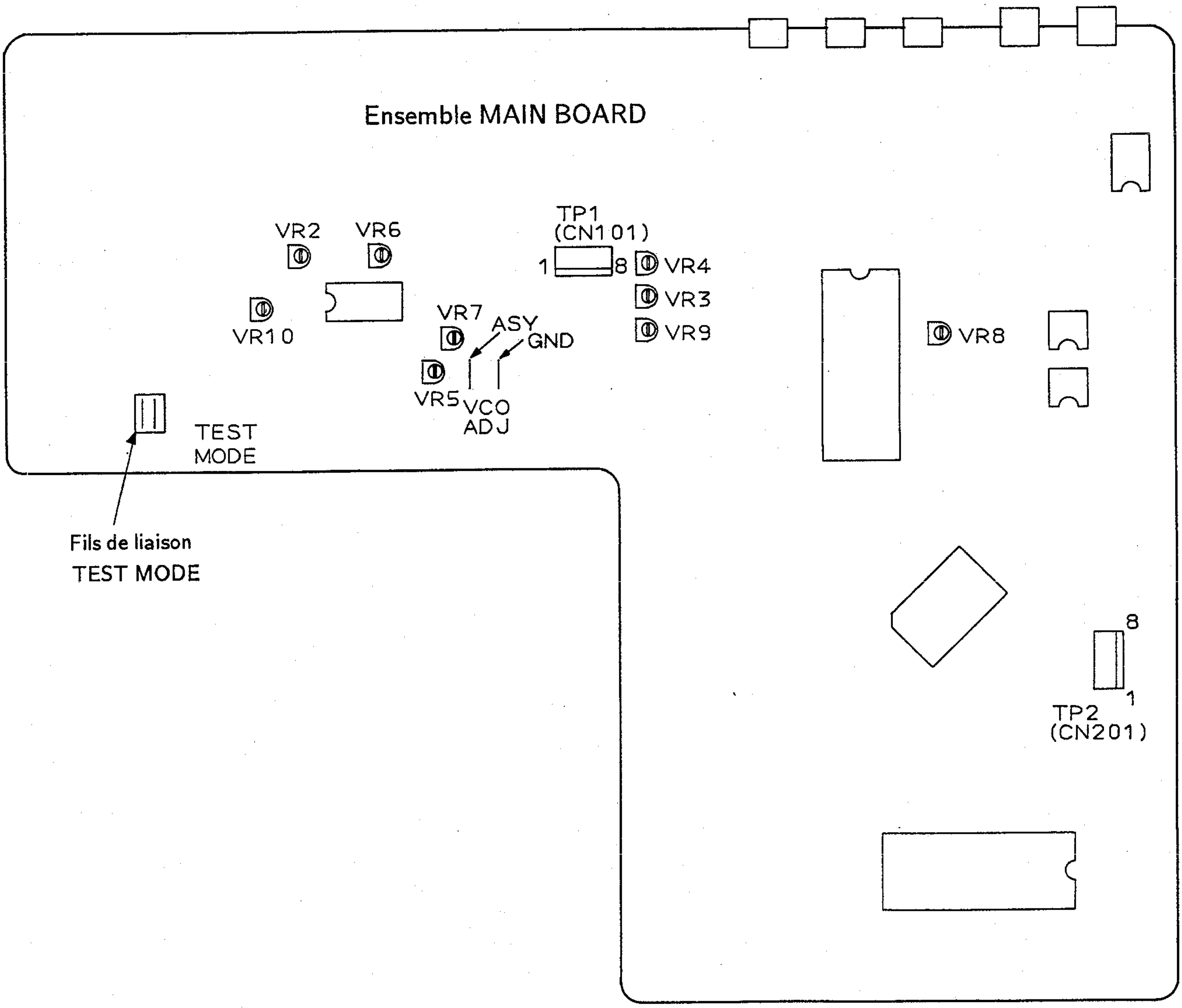
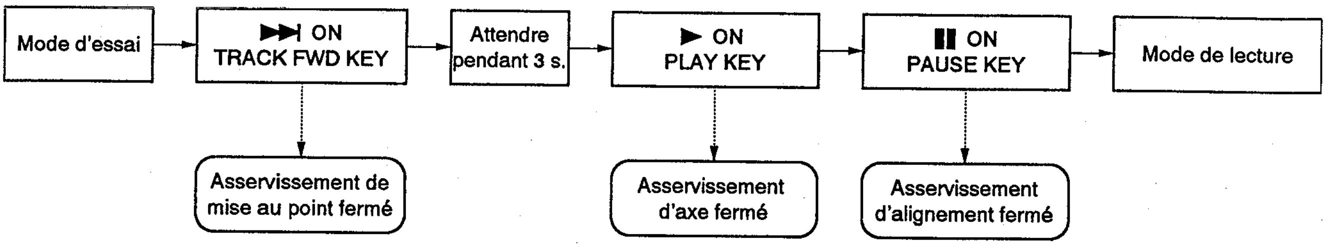

Ensemble MAIN BOARD
VR2
VR6
VR10
TP1
(CN101)
1
8
VR4
VR3
VR9
VR7
ASY
GND
VR5
VCO
ADJ
VR8
TEST
MODE
Fils de liaison
TEST MODE
8
1
TP2
(CN201)

Fig.1 Points de réglage

Dans le mode d'essai, l'ouverture et la fermeture des circuits d'asservissement sont effectuées indépendamment. Par conséquent, pour régler le mode de lecture, les asservissements doivent être fermés l'un après l'autre (en série). Ne pas oublier que, dans le mode d'essai, le mode de lecture ne peut pas être réglé simplement en appuyant sur la touche PAUSE (▮▮).

Par exemple, pour régler le mode de lecture à partir du mode d'arrêt, appuyer sur les touches suivantes dans l'ordre indiqué.


Mode d'essai
⏭ ON
TRACK FWD KEY
Attendre pendant 3 s.
▶ ON
PLAY KEY
▮▮ ON
PAUSE KEY
Mode de lecture
Asservissement de mise au point fermé
Asservissement d'axe fermé
Asservissement d'alignement fermé

* Dans le mode d'essai, les asservissements restent en séquence sérielle.

● Fonction de Chaque Touche dans le Mode D'essai

Symbole	Touche	Fonction en mode d'essai	Explication
⏭	TRACK FWD	Fermeture asservissement de mise au point	Fait s'allumer la diode laser et déplace le dispositif de commande de mise au point dans le sens vertical pour fermer l'asservissement de mise au point.
▶	PLAY	Fermeture asservissement d'axe	Après le démarrage du moteur d'axe, ferme l'asservissement dans le mode CLV–H.
▮▮	PAUSE	Fermeture/ouverture asservissement d'alignement	Exécute une opération de bascule. Quand elle est enfoncée, l'asservissement d'alignement est fermé et l'appareil passe dans le mode de lecture (les asservissements de mise au point et d'axe doivent déjà être fermés). A ce moment-là le témoin de PAUSE s'allume. Si elle est de nouveau enfoncée, l'asservissement d'alignement s'ouvre.
	OUTPUT	Retour du chariot (vers l'intérieur)	Déplace le chariot vers l'intérieur à grande vitesse (approx. 1 cm/s.). Comme il n'y a pas de dispositif de sécurité pour arrêter le chariot, il faut donc l'arrêter manuellement à temps.
	DISPLAY	Avance du chariot (vers l'extérieur)	Déplace le chariot vers l'extérieur à grande vitesse (approx. 1 cm/s.). Comme il n'y a pas de dispositif de sécurité pour arrêter le chariot, il faut donc l'arrêter manuellement à temps.
■	STOP	Arrêt	Arrête tous les asservissements et ramène l'appareil à sa condition initiale.
▲	OPEN/CLOSE	Ouverture/fermeture du plateau de disc	Ouvre et ferme le plateau de disc. Le capteur ne revient cependant pas à la position d'arrêt quand le plateau est ouvert. Il ne se déplace pas non plus quand le plateau est fermé.

Tableau 1.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
1	**Réglage du décalage d'erreur d'alignement, du décalage d'erreur de mise au point et du décalage RF (fréquence radio)**					
						● Régler le mode d'essai. (*)
		TP1	TP1 Pin 4 (TR. ER)	VR7 (TE. OF)	0V ± 50 mV	● Ajuster VR7 (TE. OF: décalage d'erreur d'alignement) afin que la tension à la broche 4 (TE: erreur d'alignement) de TP1 devienne 0V ± 50 mV.
		TP1	TP1 Pin 6 (FO. ER)	VR6 (FO.OF)	0V ± 50 mV	● Ajuster VR6 (FO. OF: décalage d'erreur de mise au point) afin que la tension à la broche 6 (FO. ER: erreur de mise au point) de TP1 devienne 0V ± 50 mV.
		TP301	TP 1 Pin 1 (RF)	VR2 (RF. OF)	100 mV ± 50 mV	● Ajuster VR2 (RF. OF: décalage RF) afin que la tension à la broche 1 de TP 1 devienne 100 mV ± 50 mV.
2	**Réglage du décalage de retour d'alignement**					
						● Régler le mode d'essai. (*)
		TP1	TP1 Pin 2 (TR. RT)	VR9 (TR. OF)	0V ± 10 mV	● Ajuster VR9 (TR. OF: décalage de retour d'alignement) afin que la tension à la broche 2 (TR. RT: retour d'alignement) de TP1 devienne 0V ± 10 mV.
3	**Contrôle du verrouillage de mise au point et du verrouillage d'axe**					
						● Charger le disc. ● Régler le mode d'essai. (*) ● Amener le capteur près du centre du disc en utilisant la touche DISPLAY. Toujours effectuer cette opération.
	V 0,5V/div	H 100 msec /div	TP 1 Pin 1 (Sortie RF)		Sortie RF	● Observer la sortie RF à la broche 1 de TP 1 avec un oscilloscope et confirmer que le signal RF est sorti lorsque la touche TRACK FWD (▶▶|) est enfoncée.
					Rotation dans le sens des aiguilles d'une montre	● Appuyer sur la touche PLAY (▶) et confirmer que le disc tourne dans le sens des aiguilles d'une montre à approximativement la vitesse normale (environ 300 tr/mn près du centre du disc), sans qu'il tourne irrégulièrement ou en sens inverse.

* Voir page 54.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
4–1	**Réglage du filtre (1) (avec un disc de 8 cm)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Filtre	Point nul	● Ce réglage peut être effectué avec un disc de 8 cm ayant des microcuvettes sur un rayon supérieur à 75 mm. ● Charger le disc. (8 cm) ● Régler le mode d'essai. (*) ● Appuyer sur les touches TRACK FWD (▶▶|) et PLAY (▶) dans cet ordre pour fermer les asservissements de mise au point et d'axe (l'asservissement d'alignement est en état ouvert). ● Appuyer sur la touche DISPLAY. et amener le capteur sur la piste extérieure du disc de 8 cm. Lors du déplacement du capteur, il est possible d'insérer un tournevis dans la fente de la plaque de réglage du filtre depuis le haut de l'appareil. (Fig. 3). ● Observer la forme d'onde à la broche 4 (TR. ER: erreur d'alignement) de TP1 avec un oscilloscope et à ce moment–là, insérer un filtre passe-bas de coupure 4 kHz (Fig. 2). ● Insérer le tournevis d'alignement dans la fente de réglage et le tourner afin de trouver le point nul (Photo–1).

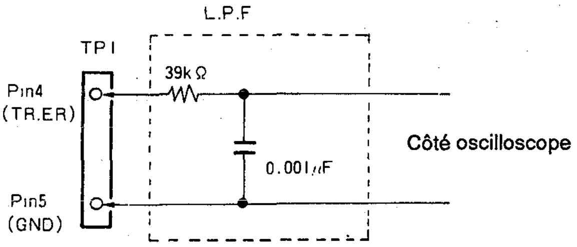


Fig. 2.

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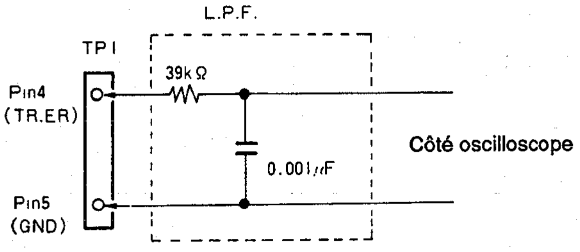
* Voir page 54.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
4–2	**Réglage du filtre (2) (avec un disc de 12 cm dont la durée de lecture est supérieure à 60 minutes)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Filtre	Point nul	● Charger le disc. (durée de lecture supérieure à 60 minutes). ● Régler le mode d'essai. (*) ● Appuyer sur les touches TRACK FWD (▶▶I) et PLAY (▶) dans cet ordre pour fermer les asservissements de mise au point et d'axe (l'asservissement d'alignement est en état ouvert). ● Appuyer sur la touche DISPLAY et amener le capteur sur la piste extérieure du disc. Lors du déplacement du capteur, il est possible d'insérer un tournevis dans la fente de la plaque de réglage du filtre depuis le haut de l'appareil. (Fig. 3). ● Observer la forme d'onde à la broche 4 (TR. ER: erreur d'alignement) de TP1 avec un oscilloscope et à ce moment–à, insérer un filtre passe–bas de coupure 4 kHz (Fig. 2). ● Insérer le tournevis d'alignement dans la fente de réglage et le tourner afin de trouver le point nul (Photo–1).
	 L.P.F. TP1 39kΩ Pin4 (TR.ER) 0.001μF Côté oscilloscope Pin5 (GND) Fig. 2.					
				Filtre	Amplitude maximum	● Tourner lentement l'excitateur de filtre dans le sens des aiguilles d'une montre à partir du point nul et le régler au premier point où l'amplitude de la forme d'onde (signal d'erreur d'alignement) est maximum. (Voir photo–2).

* Voir page 54.

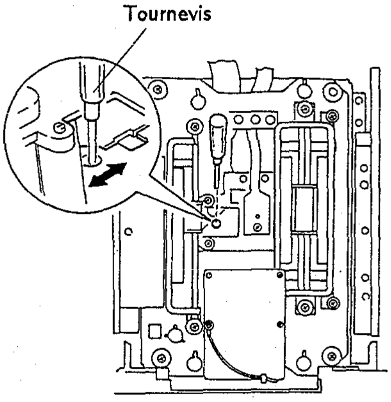
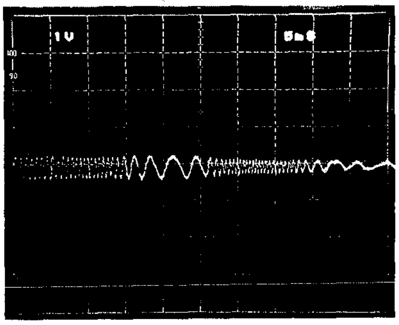
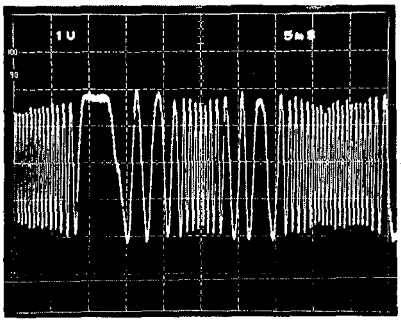


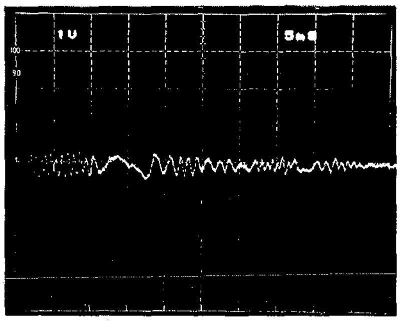
Fig. 3. Réglage du Filtre



Photo–1 Point nul



Photo–2 Amplitude maximum



Photo–3 Hors du point nul

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
5	**Réglage de l'équilibre d'alignement**					
	0.5V/div	5 msec/div	TP1 Pin 4 (TR. ER)	VR5 (TR. BL)		● Charger le disc. ● Régler le mode d'essai. (*) ● Appuyer sur la touche DISPLAY et amener le chariot près de la piste centrale du disc. ● Appuyer sur les touches TRACK FWD (▶▶I) et PLAY (▶) dans cet ordre pour faire tourner le disc. ● Observer la forme d'onde à la broche 4 (TR. ER: erreur d'alignement) de TP1 avec un oscilloscope. Et régler VR5 (TR. BL: équilibre d'alignement) afin d'éliminer les éléments CC de la forme d'onde d'erreur d'alignement.

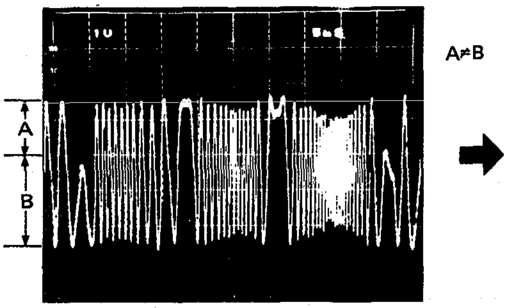


Photo-6

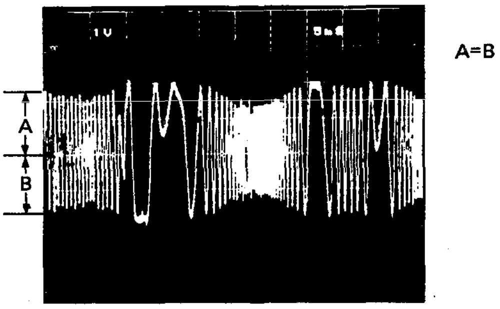


Photo-7

* Voir page 54.

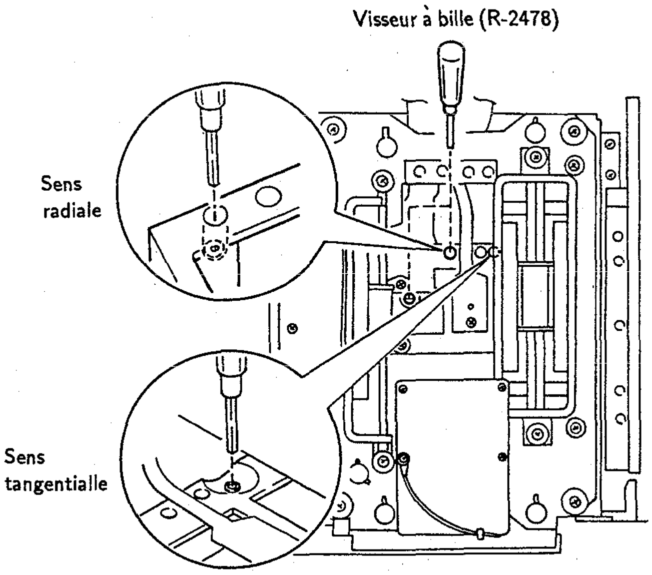
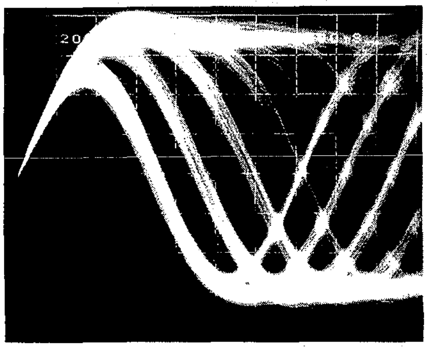
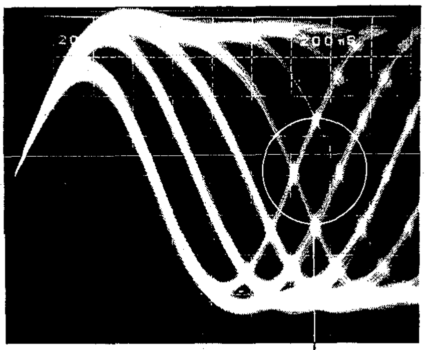

Visseur à bille (R-2478)
Sens radiale
Sens tangentialle

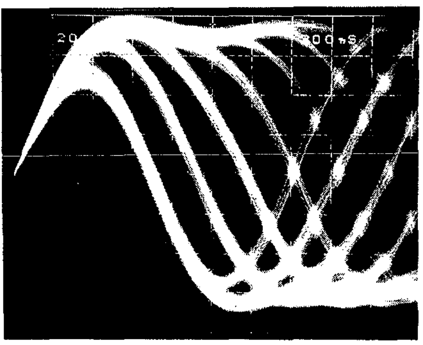
Fig. 4. Réglage Tangentiel



Photo–8

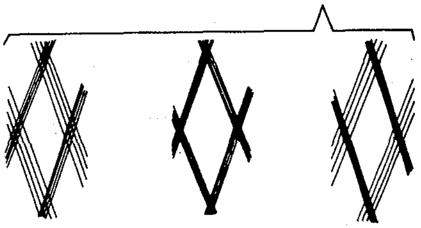


Photo–9



Photo–10

Pièce à observer


INCORRECT
Optimum
INCORRECT

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
6	**Réglage tangentiel**					
			TP 1 Pin 1 (Sortie RF)	Vis de réglage tangentiel	Point optimum de mire	● Charger le disc. ● Régler le mode d'essai. (*) ● Appuyer sur la touche DISPLAY et amener le capteur à la piste centrale du disc. (Le placer à un endroit où la vis tangentielle peut être vue depuis le haut du mécanisme d'asservissement. (Voir Fig. 4.). ● Appuyer sur les touches TRACK FWD (▶▶|), PLAY (▶) et PAUSE (▮▮) dans cet ordre pour fermer tous les asservissements. (Le témoin de pause s'allume). ● Observer la sortie RF broche 1 de TP 1 avec un oscilloscope et régler la vis tangentielle afin que la mire devienne claire. (Fig. 4.). ● Le point de réglage est situé vers la position médiane entre le point où la mire devient floue lorsque la vis tangentielle est tournée dans le sens des aiguilles d'une montre et le point où la mire devient floue lorsque la vis de réglage est tournée dans le sens inverse. Observer la netteté d'ensemble de la forme d'onde et une des formes en diamant dans la mire (Photo–9). Le réglage optimum est obtenu au point où les lignes de la forme en diamant sont relativement fines.

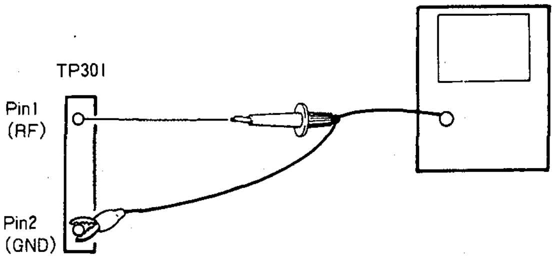
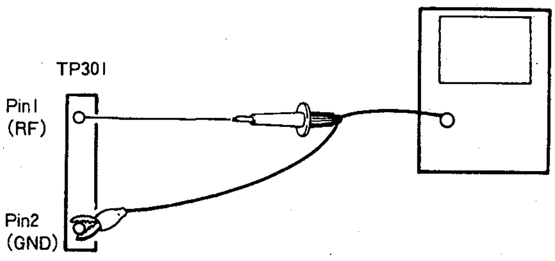


Fig. 5

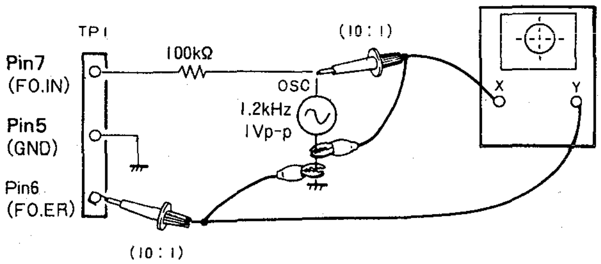
* Voir page 54.

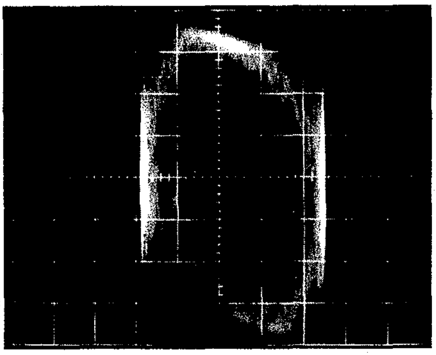
Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
7	**Réglage radial**					
			TP 1 Pin 1 (Sortie RF)	Vis de réglage radial	Point optimum de mire	● Charger le disc. ● Régler le mode d'essai. (*) ● Appuyer sur la touche DISPLAY et amener le capteur à la piste centrale du disc. (Le placer à un endroit où la vis radiale peut être vue depuis le haut du mécanisme d'asservissement. (Voir Fig. 5.). ● Appuyer sur les touches TRACK FWD (▶▶|), PLAY (▶) et PAUSE (❚❚) dans cet ordre pour fermer tous les asservissements. (Le témoin de pause s'allume). ● Observer la sortie RF broche 1 de TP 1 avec un oscilloscope et régler la vis radiale afin que la mire devienne claire. (Fig. 4.). ● Le point de réglage est situé vers la position médiane entre le point où la mire devient floue lorsque la vis radiale est tournée dans le sens des aiguilles d'une montre et le point où la mire devient floue lorsque la vis de réglage est tournée dans le sens inverse. Observer la netteté d'ensemble de la forme d'onde et une des formes en diamant dans la mire (Photo–9). Le réglage optimum est obtenu au point où les lignes de la forme en diamant sont relativement fines. ● Effectuer alternativement, deux fois ou plus, les réglages tangentiel et radial.  Fig. 5

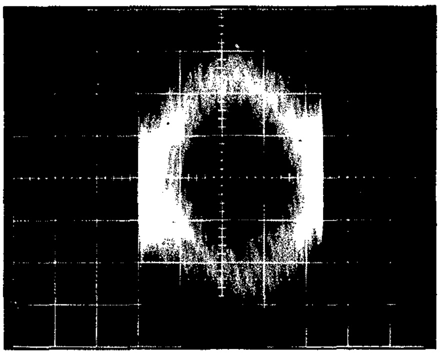
* Voir page 54.

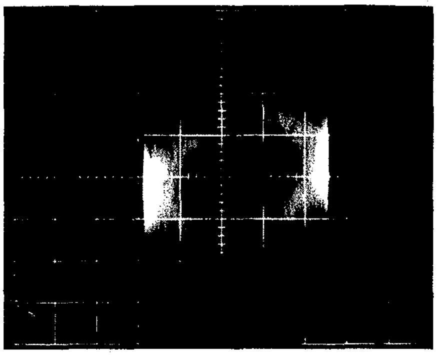
Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
8	**Contrôle du niveau RF (fréquence radio)**					
			TP 1 Pin 1 (RF)	Contrôle	1,5V $^{+0,2V}_{-0V}$	● Régler le mode d'essai. (*) ● Connecter la sonde de l'oscilloscope à la sortie RF broche 1 de TP 1 . ● Reproduire le disc, mesurer la tension c-c de la forme d'onde RF et confirmer qu'elle devient 1,5V $^{+0,2V}_{-0V}$.
			TP 1 Pin 1 (RF)	VR 10	1,5V $^{+0,2V}_{-0V}$	● Ajuster VR 10 si la tension ne devient pas 1,5V $^{+0,2V}_{-0V}$.

* Voir page 54.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
9	**Réglage du gain de mise au point**					
	CH1 (X) , CH2 (Y) 20 mV/div, 5 mV/div (Sonde 10:1)		Axe X: TP1 Pin 5 (FO. IN) Axe Y: TP1 Pin 6 (FO. ER)	VR3 (FO. GA)	Différence de phase 90 °	● L'alimentation étant coupée, connecter l'oscilloscope et l'oscillateur comme indiqué sur la Fig. 6. ● Régler le mode de lecture normal. ● Mettre l'oscillateur sous tension et le régler pour sortir un signal 1 Vc–c, 1,2 kHz. **Remarque:** (Certains oscillateurs sortent CC lorsqu'ils sont mis sous tension. Dans ce cas, connecter l'oscillateur après l'avoir mis sous tension). ● Ajuster VR3 (FO. GA: gain de mise au point) afin que la forme d'onde de choc sur l'oscilloscope devienne un cercle horizontal (différence de phase 90 °).  TP1 Pin7 (FO.IN) Pin5 (GND) Pin6 (FO.ER) 100kΩ OSC 1.2kHz 1Vp-p (10 : 1) (10 : 1) X Y Fig. 6.


Gain élevé
Photo–11


Gain optimum
Photo–12


Gain faible
Photo–13

<table>
<tr><th rowspan="2">Etape No.</th><th colspan="2">Réglage de l'oscilloscope</th><th rowspan="2">Points d'essai</th><th rowspan="2">Points de réglage</th><th rowspan="2">Eléments contrôlés/ spécifications de réglage</th><th rowspan="2">Procédure de réglage</th></tr>
<tr><th>V</th><th>H</th></tr>
<tr><td>10</td><td colspan="6">Réglage du gain d'alignement</td></tr>
<tr><td></td><td colspan="2">CH1 (X), CH2 (Y)
50 mV/div, 5 mV/div
(Sonde 10:1)</td><td>Axe X:
TP1 Pin 3
(TR. IN)
Axe Y:
TP1 Pin 2
(TR. ER)</td><td>VR4
(TR. GA)</td><td>Différence de phase 90°</td><td>
- L'alimentation étant coupée, connecter l'oscilloscope et l'oscillateur comme indiqué sur la Fig. 7.
- Régler le mode de lecture normal.
- Mettre l'oscillateur sous tension et le régler pour sortir un signal 2 Vc–c, 1 kHz.
Remarque: (Certains oscillateurs sortent CC lorsqu'ils sont mis sous tension. Dans ce cas, connecter l'oscillateur après l'avoir mis sous tension).
- Ajuster VR4 (TR. GA: gain d'alignement) afin que la forme d'onde de choc sur l'oscilloscope devienne un cercle horizontal (différence de phase 90°).

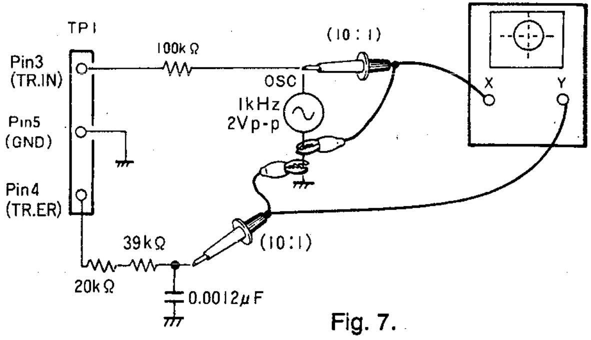
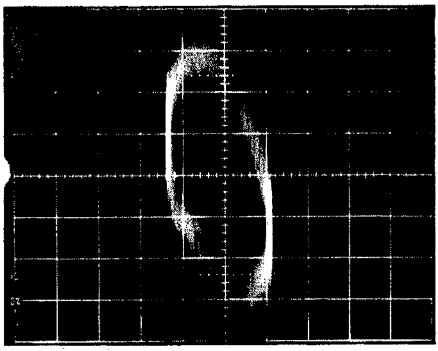
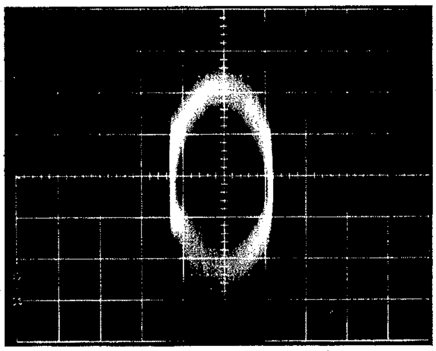
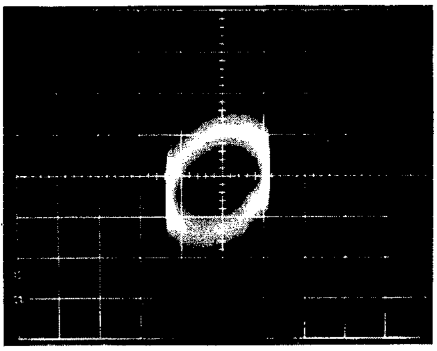


Fig. 7.
</td></tr>
<tr><td colspan="7">


Gain élevé
Photo–14



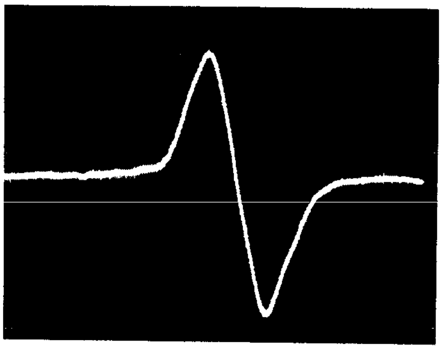
Gain optimum
Photo–15



Gain faible
Photo–16
</td></tr>
<tr><td>11</td><td colspan="6">Réglage de la fréquence de relaxation du VCO (oscillateur à fréquence réglée par variation de tension)</td></tr>
<tr><td></td><td></td><td></td><td>TP 2 Pin 2</td><td></td><td>Fréquence
4,275 MHz ±
0,025 MHz</td><td>
- Régler le mode d'essai. (*)
- Coupler ASY et les fils GND en utilisant un tournevis à fente ou objet similaire.
- Connecter le fréquencemètre (gamme 10 MHz) à la broche 2 de TP 2.
- Ajuster VR8 (VCO. A) afin que le fréquencemètre indique 4,275 MHz ± 0,025 MHz.
Remarque: Ajuster dans le mode d'arrêt.
</td></tr>
</table>

* Voir page 54.

Etape No.	Réglage de l'oscilloscope		Points d'essai	Points de réglage	Eléments contrôlés/ spécifications de réglage	Procédure de réglage
	V	H				
12	**Contrôle d'erreur de mise au point**					
	1V/div	2 ms/div	TP1 Pin 6 (FO. ER)	Contrôle	Forme d'onde	● Régler le mode d'essai. (*) ● Connecter la broche 7 FO. IN (entrée de mise au point) de TP1 à GND. ● Appuyer sur la touche TRACK FWD et contrôler la forme d'onde à la broche 6 FO. ER (erreur de mise au point) de TP1 avec l'oscilloscope.



Erreur de mise au point
Photo–17

* Voir page 54.

6. AJUSTES

Realice los siguientes ajustes en el orden indicado:

● Ajustes

1. Ajuste de compensación del error de seguimiento, del error de foco y de RF
2. Ajuste de compensación del retorno de seguimiento
3. Comprobación de la sincronización del foco y del eje
4. Ajuste de la rejilla
5. Ajuste del equilibrio del seguimiento
6. Ajuste tangencial
7. Ajuste radial
8. Comprobación del nivel de RF
9. Ajuste de la ganancia de foco
10. Ajuste de la ganancia de seguimiento
11. Ajuste de la frecuencía propia del VCO (oscilador controlado por tensión)
12. Método de comprobación del error de foco

● Dispositivos de Medición

1. Osciloscopio de doble trazo
2. Medidor de potencia lumínica
3. Disco de prueba YEDS–7
4. Filtro de ajuste de foco y seguimiento
5. Filtro de paso de banda para el ajuste de la ganancia de bucle.
6. Generador de señales
7. Destornillador de la rejilla
8. Herramientas de uso general
9. Disco disponible comercialmente (de 8 cm y de 12 cm)
10. Llave hex.(GGK 1002, 1.5 mm)

● Modo de prueba

Activación y desacivation del mode de prueba

① Para activar el mode de prueba, ponga en ON el interruptor de alimentación con el puente del mode de prueba cortocircuitado.

② El modo de pruebga se desactivará poniendo el interrupter de alimentación en OFF.

Las funciónes de las teclas en el modo de prueba se describen en la tabla 1.

● Descripción de los Resistores Variables Empleados para el Ajuste

VR2: Compensación de RF (RF. OF)
VR3: Ganancia de foco (FO. GA)
VR4: Ganancia de seguimiento (TR. GA)
VR5: Equilibrio de seguimiento (TR. BL)
VR6: Compensación del error de foco (FO. OF)
VR7: Compensación del error de seguimiento (TE. OF)
VR8: Contador de frecuencias del oscilador controlado por tensión (VCOA)
VR9: Compensación del retorno de seguimiento (TR. OF)
VR10 : Nivel de RF (RF.LEV)

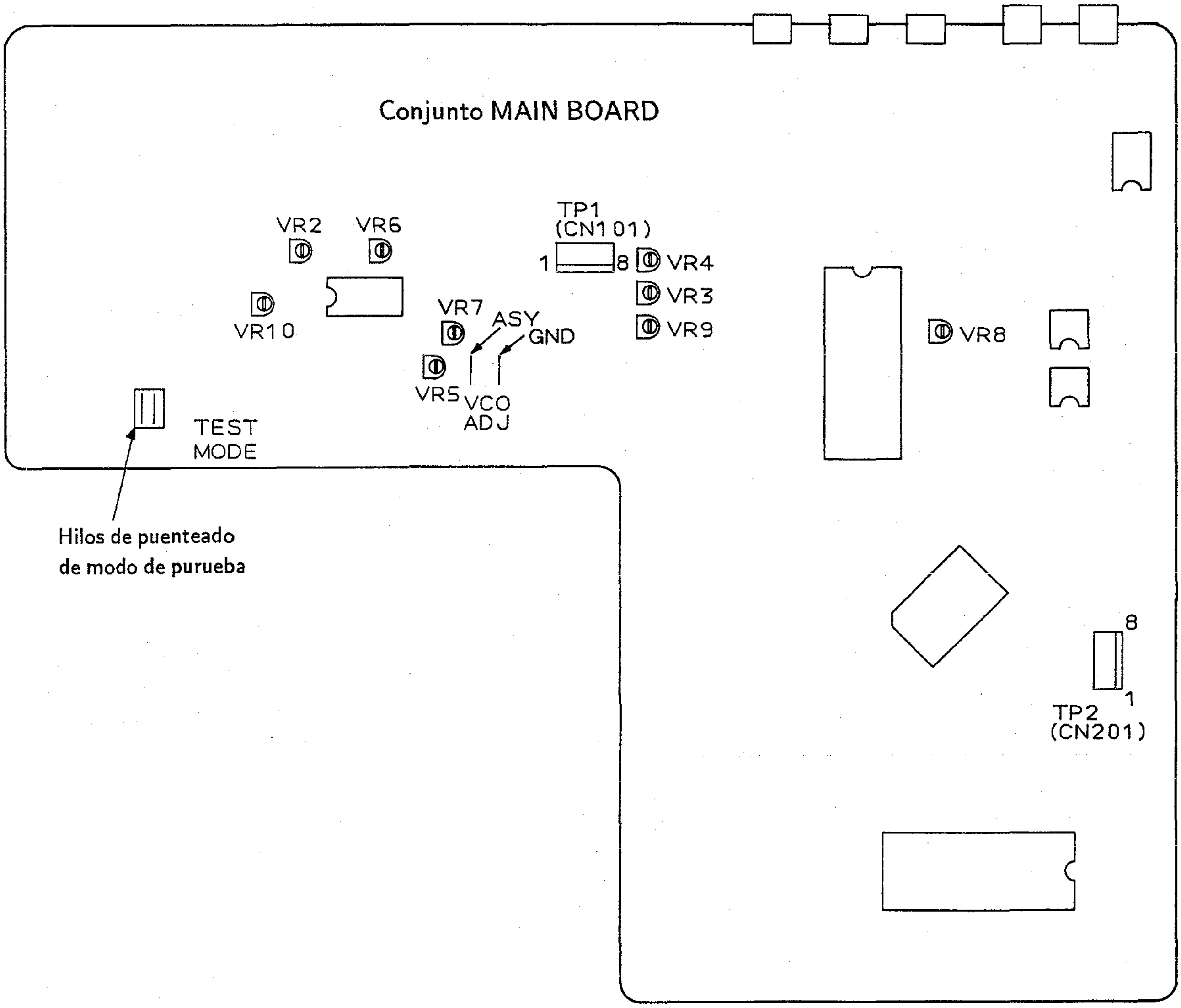
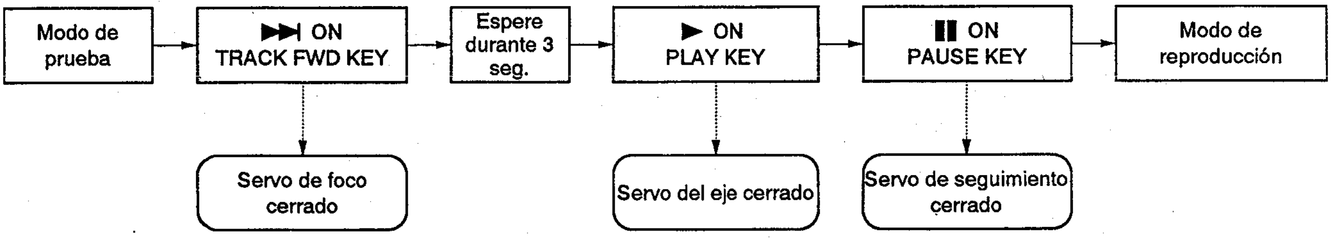

Conjunto MAIN BOARD
VR2
VR6
VR10
TP1
(CN101)
1
8
VR4
VR3
VR9
VR7
ASY
GND
VR5
VCO
ADJ
VR8
TEST
MODE
Hilos de puenteado
de modo de purueba
8
1
TP2
(CN201)

Fig.1 Punt de ajuste

En el modo de prueba, la apertura y cerrado de los servos se efectúa independientemente. Por lo tanto, para establecer el modo de reproduccion se deben cerrar los servos en orden serial. Recuerde que en el modo de prueba no se puede establecer el modo de reproducción pulsando simplemente la tecla PAUSE (❚❚).

Por ejemplo, para establecer el modo de reproducción partiendo del modo de parada pulse las teclas siguientes en el orden indicado.



* En el modo de prueba los servos siguen un orden serial.

● Función de Cada Tecla en el Modo de Prueba

Símbolo	Tecla	Función durante el modo de prueba	Explicación
⏭	TRACK FWD	Cerrar el servo del foco	Enciende el diodo laser y mueve el actuador del foco en dirección vertical para cerrar el servo del foco.
▶	PLAY	Cerrar el servo del eje	Después de arrancar el motor del eje, cierre el servo en el modo CLV-H.
❚❚	PAUSE	Abrir/cerrar el servo de seguimiento	Ejecuta una conmutación. Al pulsar esta tecla se cierra el servo de seguimiento y la unidad entra en el modo de reproducción (los servos del foco y del eje deben estar cerrados previamente). En ese momento se enciende el indicador PAUSE. Si se la pulsa nuevamente, se abre el servo de seguimiento.
	OUTPUT	Movimiento en retroceso (hacia dentro) del carro	Mueve el carro hacia dentro a alta velocidad (aprox. 1 cm/seg.). Dado que no existe un dispositivo de seguridad que detenga el carro, asegúrese de detenerlo manualmente a tiempo.
	DISPLAY	Movimiento en avance (hacia fuera) del carro	Mueve el carro hacia fuera a alta velocidad (aprox. 1 cm/seg). Dado que no existe un dispositivo de seguridad que detenga el carro, asegúrese de detenerlo manualmente a tiempo.
■	STOP	Parada	Detiene todos los servos y hace que la unidad vuelva a su estado inicial.
▲	OPEN/CLOSE	Abrir/cerrar la bandeja del disco	Abre y cierra la bandeja del disco. Sin embargo, el lector no vuelve a la posición de reposo cuando se abre la bandeja y tampoco se mueve al cerrarse la bandeja.

Tabla 1.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
1	**Ajuste de compensación del error de seguimiento, del error de foco y de RF**					
						● Establezca el modo de prueba (*)
		TP1	TP1 Pin 4 (TR. ER)	VR7 (TE. OF)	0V ± 50 mV	● Ajuste VR7 (TE. OF: compensación del error de seguimiento) de forma que la tensión en el contacto 4 (TE: error de seguimiento) de TP1 sea 0V ± 50 mV.
		TP1	TP1 Pin 6 (FO. ER)	VR6 (FO.OF)	0V ± 50 mV	● Ajuste VR6 (FO. OF: compensación del error de foco) de forma que la tensión en el contacto 6 (FO. ER: error de foco) de TP1 sea 0V ± 50 mV.
		TP301	TP 1 Pin 1 (RF)	VR2 (RF. OF)	100 mV ± 50 mV	● Ajuste VR2 (RF. OF: compensación de RF) de forma que la tensión de salida de RF en el contacto 1 de TP 1 sea 100 mV ± 50 mV.
2	**Ajuste de compensación del retorno de seguimiento**					
						● Establezca el modo de prueba. (*)
		TP1	TP1 Pin 2 (TR. RT)	VR9 (TR. OF)	0V ± 10 mV	● Ajuste VR9 (TR. OF: compensación del retorno de seguimiento) de forma que la tensión en el contacto 2 (TR. RT: retorno de seguimiento) de TP1 sea 0V ± 10 mV.
3	**Comprobación de la sincronización del foco y del eje**					
						● Cargue el disco. ● Establezca el modo de prueba. (*) ● Aproxime el lector al centro del disco usando la tecla DISPLAY. Asegúrese de efectuar esta operación.
	V 0.5V/div	H 100 msec /div	TP 1 Pin 1 (Salida de RF)		Salida de RF	● Observe la salida de RF por el contacto 1 de TP 1 con un osciloscopio y confirme que la señal de RF sea emitida al pulsar la tecla TRACK FWD (▶▶I).
					Rotación en sentido horario	● Pulse la tecla PLAY (▶) y confirme que el disco gira en sentido horario a aproximadamente la velocidad normal (unos 300 rpm por estar el lector cerca del centro del disco) sin que corra descontroladamente o en dirección inversa.

* Vea la página 69.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
4–1	**Ajuste de la rejilla (1) (con un disco de 8 cm)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Rejilla	Punto nulo	● Este ajuste puede realizarse utilizando un disco de 8 cm con hoyos sobre un diámetro de 75 mm. ● Cargue el disco. (8 cm) ● Establezca el modo de prueba. (*) ● Pulse las teclas TRACK FWD (▶▶I) y PLAY (▶) en este orden para cerrar los servos del foco y del eje (el servo de seguimiento estará abierto). ● Pulse la tecla DISPLAY y mueva el lector a la pista externa del disco de 8 cm. Cuando mueva el lector, será posible introducir un destornillador en la ranura de la placa de ajuste de la rejilla desde la parte de arriba de la unidad. (Fig. 3) ● Observe la forma de la onda por el contacto 4 (TR. ER: error de seguimiento) de TP1 con un osciloscopio y, en ese momento, introduzca un filtro de corte pasabajos de 4 kHz. (Fig. 2) ● Introduzca el destornillador de seguimiento en la ranura de ajuste y gírelo de forma que encuentre el punto nulo (Foto–1).

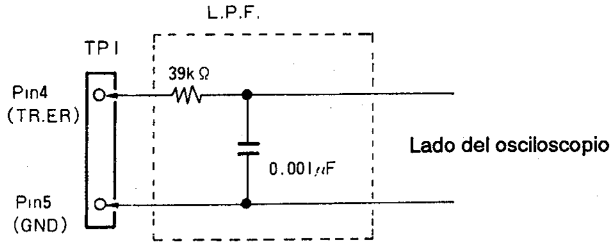


Fig. 2.

* Vea la página 69.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
4-2	**Ajuste de la rejilla (2) (con un disco de 12 cm reproduciendo durante más de 60 minutos)**					
	1V/div	5 ms/div	TP1 Pin 4 (TR. ER)	Rejilla	Punto nulo	● Cargue el disco (reproduciendo durante más de 60 minutos). ● Establezca el modo de prueba. (*) ● Pulse las teclas TRACK FWD (▶▶▎) y PLAY (▶) en este orden para cerrar los servos del foco y del eje (el servo de seguimiento estará abierto). ● Pulse la tecla DISPLAY y mueva el lector a la pista externa del disco. Cuando mueva el lector, será posible introducir un destornillador en la ranura de la placa de ajuste de la rejilla desde la parte de arriba de la unidad. (Fig. 3) ● Observe la forma de la onda por el contacto 4 (TR. ER: error de seguimiento) de TP1 con un osciloscopio y, en ese momento, introduzca un filtro de corte pasabajos de 4 kHz. (Fig. 2) ● Introduzca el destornillador de seguimiento en la ranura de ajuste y gírelo de forma que encuentre el punto nulo. (Foto–1)
				Rejilla	Amplitud máxima	● Gire el destornillador de la rejilla lentamente en sentido antihorario a partir del punto nulo y deténgase en el primer punto donde la amplitud de la onda (señal de error de seguimiento) sea máxima. (Vea Foto–2)

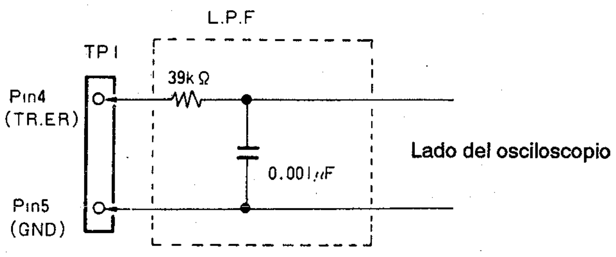


Fig. 2.

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* Vea la página 69.

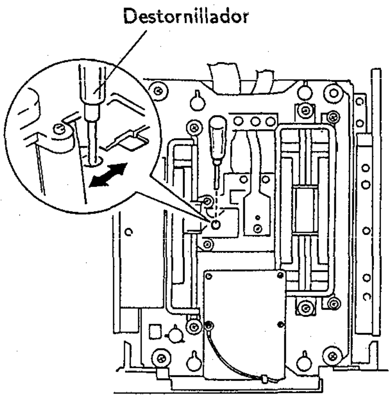
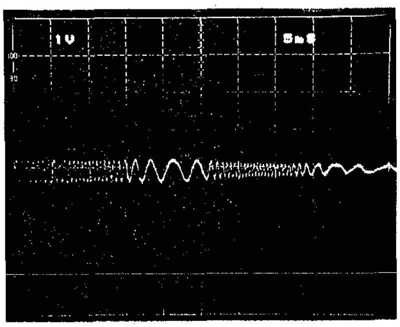
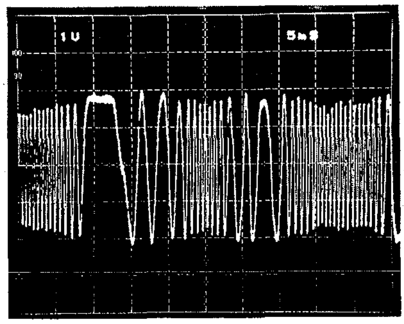

Destornillador

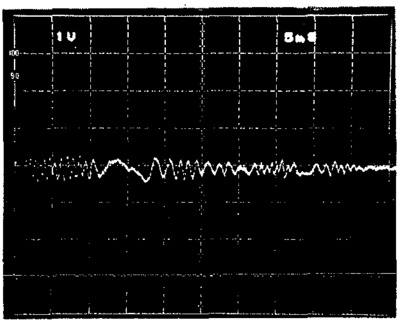
Fig. 3. Ajuste de la Rejilla



Foto–1 Punto nulo

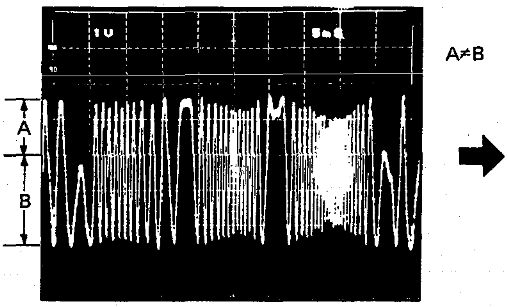


Foto–2 Amplitud máxima

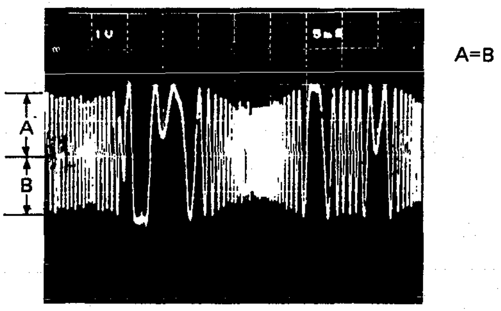


Foto–3 Fuera del punto nulo

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
5	**Ajuste del equilibrio del seguimiento**					
	0,5V/div	5 msec/div	TP1 Pin 4 (TR. ER)	VR5 (TR. BL)		● Cargue el disco ● Establezca el modo de prueba. (*) ● Pulse la tecla DISPLAY y mueva el carro hasta cerca de la pista central del disco. ● Pulse las teclas TRACK FWD (▶▶I) y PLAY (▶) en ese orden para hacer girar el disco. ● Observe la forma de la onda por el contacto 4 (TR. ER: error de seguimiento) de TP1 con un osciloscopio y ajuste el VR5 (TR. BL: equilibrio de seguimiento) de forma que desaparezcan los elementos de CC de la onda del error de seguimiento.



Foto–6



Foto–7

* Vea la página 69.

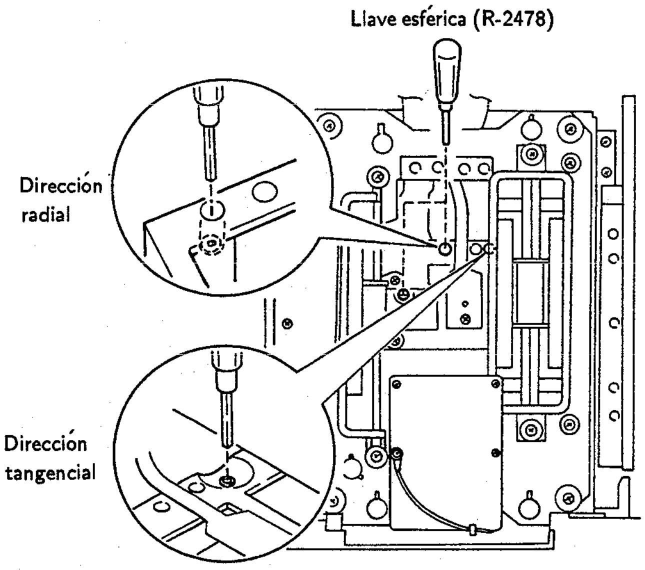
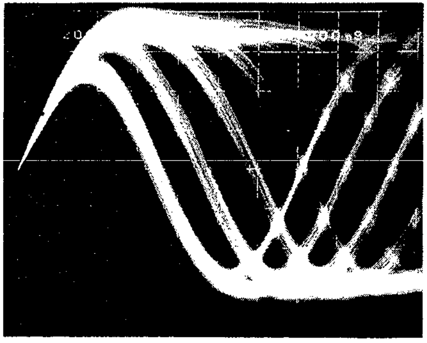
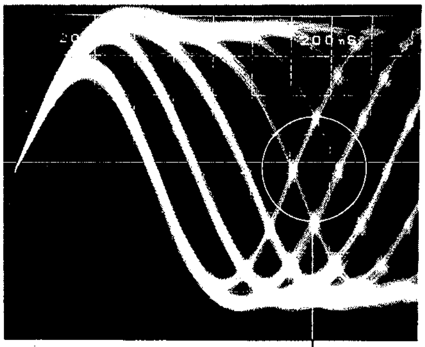

Llave esférica (R-2478)
Dirección radial
Dirección tangencial

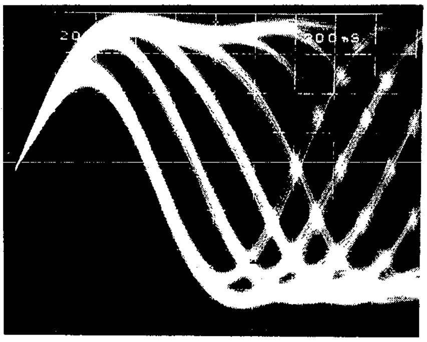
Fig. 4. Ajuste Tangencial



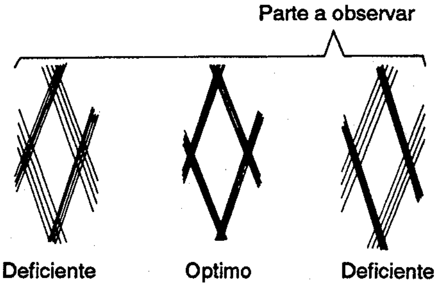
Foto–8

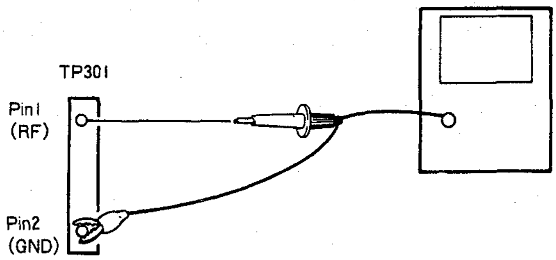


Foto–9



Foto–10


Parte a observar
Deficiente
Optimo
Deficiente

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
6	**Ajuste tangencial**					
			TP 1 Pin 1 (Salida de RF)	Tornillo de ajuste tangencial	Punto óptimo de la figura del ojo	● Cargue el disco. ● Establezca el modo de prueba. (*) ● Pulse la tecla DISPLAY y mueva el lector a la pista central del disco (colóquelo en un lugar tal que el tornillo de ajuste tangencial pueda verse desde arriba del servomecanismo. (Vea la Fig. 4) ● Pulse las teclas TRACK FWD (▶▶|), PLAY (▶) y PAUSE (❚❚) en este orden para cerrar todos los servos. (Se enciende el indicador de pausa). ● Observe la salida de RF por el contacto 1 de TP 1 con un osciloscopio y ajuste el tornillo tangencial de forma que la figura del ojo se vea claramente. (Fig. 4) ● El punto de ajuste se encuentra cerca del punto medio entre el punto donde la figura del ojo se enturbia al girar el tornillo tangencial en sentido horario y el punto donde la figura del ojo se enturbia al girar el tornillo de ajuste en sentido antihorario. Observe la claridad general de la onda y una de las figuras del diamante en la figura del ojo (foto–9). El ajuste óptimo se obtiene donde las líneas de la figura del diamante son relativamente delgadas.  Fig. 5

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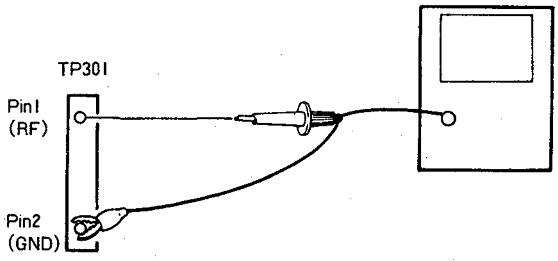
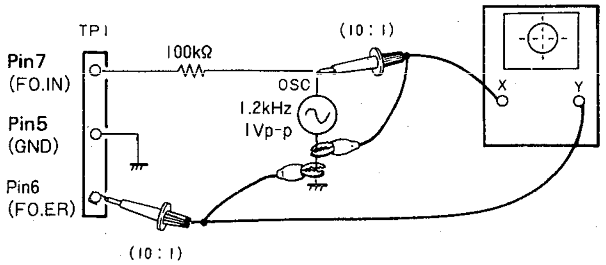
* Vea la página 69.

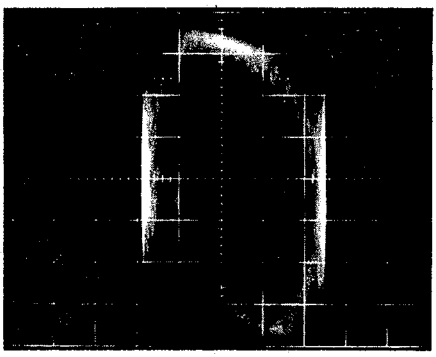
Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
7	**Ajuste radial**					
			TP 1 Pin 1 (Salia de RF)	Tornillo de ajuste radial	Punto óptimo de la figura del ojo	● Cargue el disco. ● Establezca el modo de prueba. (*) ● Pulse la tecla DISPLAY y mueva el lector a la pista central del disco (colóquelo en un lugar tal que el tornillo de ajuste tangencial pueda verse desde arriba del servomecanismo. (Vea la Fig. 5) ● Pulse las teclas TRACK FWD (▶▶|), PLAY (▶) y PAUSE (❚❚) en este orden para cerrar todos los servos. (Se enciende el indicador de pausa). ● Observe la salida de RF por el contacto 1 de TP 1 con un osciloscopio y ajuste el tornillo radial de forma que la figura del ojo se vea claramente. (Fig. 4) ● El punto de ajuste se encuentra cerca del punto medio entre el punto donde la figura del ojo se enturbia al girar el tornillo radial en sentido horario y el punto donde la figura del ojo se enturbia al girar el tornillo de ajuste en sentido antihorario. Observe la claridad general de la onda y una de las figuras del diamante en la figura del ojo (foto–9). El ajuste óptimo se obtiene donde las líneas de la figura del diamante son relativamente delgadas. ● Efectúe los ajustes tangencial y radial alternativamente dos o más veces.  Fig. 5

* Vea la página 69.

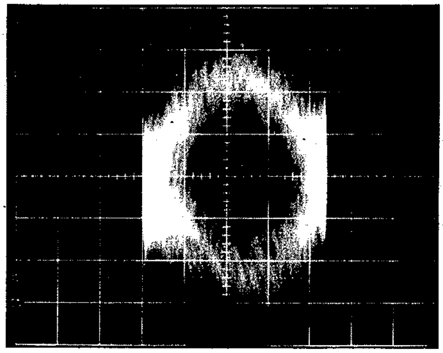
Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
8	**Comprobación del nivel de RF**					
			TP 1 Pin 1 (RF)	Comprobación	1.5V $^{+0,2V}_{-0V}$	● Establezca el modo de prueba. (*) ● Conecte la sonda del osciloscopio al contacto 1 (salida de RF) de TP 1. ● Reproduzca el disco, mida la tensión p-p de la onda de RF y confirme que sea 1.5V $^{+0,2V}_{-0V}$.
			TP 1 Pin 1 (RF)	VR 10	1.5V $^{+0,2V}_{-0V}$	● Ajuste VR 10 si la tensión no es 1.5V $^{+0,2V}_{-0V}$.

* Vea la página 69.

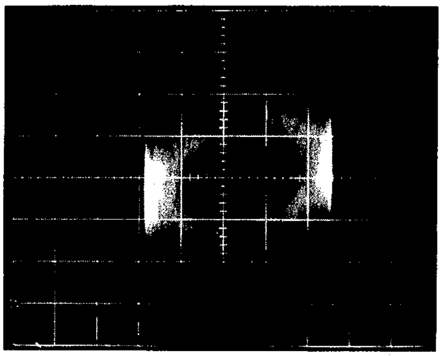
Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
9	**Ajuste de la ganancia de foco**					
	CH1 (X) , CH2 (Y) 20 mV/div, 5 mV/div (Sonda 10:1)		Eje X: TP1 Pin 5 (FO. IN) Eje Y: TP1 Pin 6 (FO. ER)	VR3 (FO. GA)	Diferencia de fase de 90 °	● Con la unidad apagada, conecte el osciloscopio y el oscilador como muestra la Fig. 6. ● Establezca el modo de reproducción normal. ● Encienda el oscilador y ajústelo para que emita una señal de 1,2 kHz, 1 Vp-p. **Nota:** Algunos osciladores emiten CC al ser encendidos. En este caso, encienda el oscilador antes de conectarlo. ● Ajuste VR3 (FO. GA: ganancia de foco) de forma que la onda de resurgimiento en el osciloscopio se convierta en un círculo horizontal (diferencia de fase de 90 °).  TP1 Pin7 (FO.IN) Pin5 (GND) Pin6 (FO.ER) 100kΩ OSC 1.2kHz 1Vp-p (10 : 1) (10 : 1) X Y Fig. 6.



Alta ganancia
Foto–11



Ganancia óptima
Foto–12



Baja ganancia
Foto–13

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
10	**Ajuste de la ganancia de seguimiento**					
	CH1 (X), CH2 (Y) 50 mV/div, 5 mV/div (Sonda 10:1.)		Eje X: TP1 Pin 3 (TR. IN) Eje Y: TP1 Pin 2 (TR. ER)	VR4 (TR. GA)	Diferencia de fase de 90°	● Con la unidad apagada, conecte el osciloscopio y el oscilador como muestra la Fig. 7. ● Establezca el modo de reproducción normal. ● Encienda el oscilador y ajústelo para que emita una señal de 1 kHz, 2 Vp-p. **Nota:** Algunos osciladores emiten CC al ser encendidos. En este caso, encienda el oscilador antes de conectarlo. ● Ajuste VR4 (TR. GA: ganancia de seguimiento) de forma que la onda de resurgimiento en el osciloscopio se convierta en un círculo horizontal (diferencia de fase de 90°).

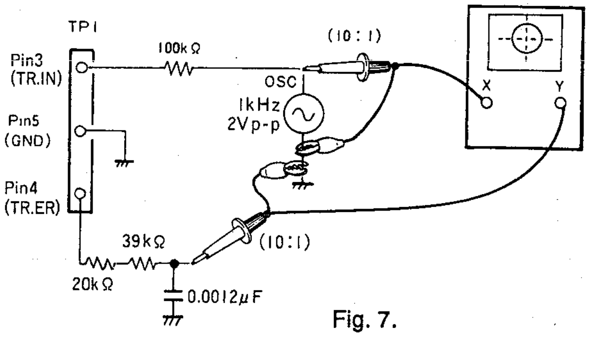
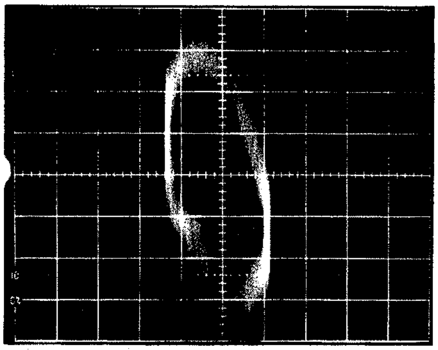
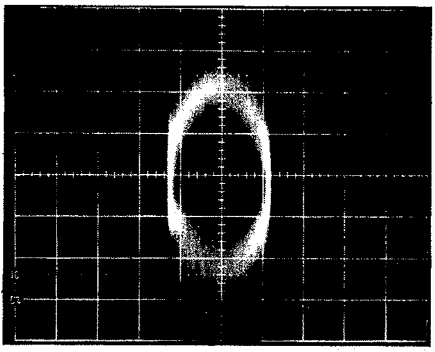


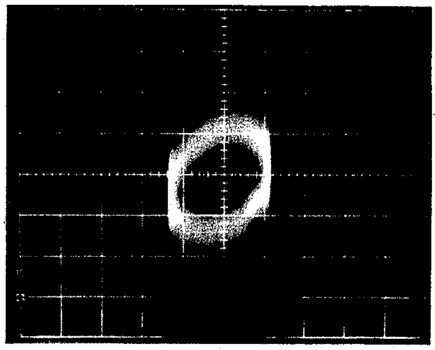
Fig. 7.



Alta ganancia
Foto–14



Ganancia óptima
Foto–15

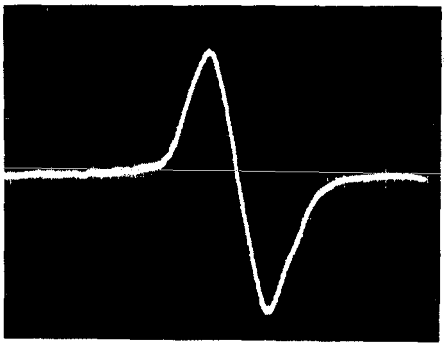


Baja ganancia
Foto–16

Paso	V	H	Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
11	**Ajuste de la frecuencia propia del oscilador controlado por tensión**					
			TP 2 Pin 2		Frecuencia 4,275 MHz ± 0,025 MHz	● Establezca el modo de prueba. (*) ● Ponga en derivacion los puentes del ASY y GND empleando un destornillador de cabeza ranurada u otra herramienta similar. ● Conecte el contador de frecuencias (margen de 10 MHz) al contacto 2 de TP 2. ● Ajuste VR8 (VCO. A) de forma que en el contador de frecuencias se lea 4,275 MHz ± 0,025 MHz. **Nota:** Ajuste con la unidad en el modo de parada

* Vea la página 69.

Paso	Margen del osciloscopio		Puntos de prueba	Puntos de ajuste	Item a probar/Especif. de ajuste	Procedimiento de ajuste
	V	H				
12	**Comprobación del error de foco**					
	1V/div	2 ms/div	TP1 Pin 6 (FO. ER)	Comprobación	Forma de onda	● Establezca el modo de prueba. (*) ● Conecte a tierra el contacto 7 (FO. IN: entrada de foco) de TP1. ● Pulse la tecla TRACK FWD y compruebe la forma de la onda en el contacto 6 (FO. ER: error de foco) de TP1 con un osciloscopio.



Error de foco
Foto–17

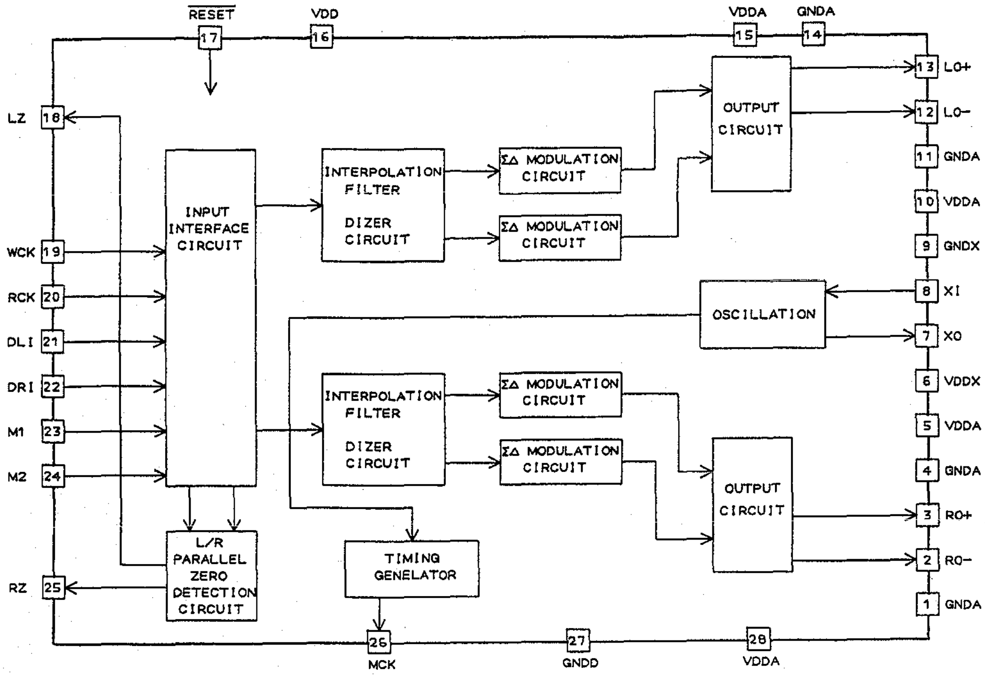
* Vea la página 69.

7. IC INFORMATION

■PD2028A

D/A Converter

● Block Diagram


RESET
17
VDD
16
VDDA
15
GNDA
14
13 LO+
12 LO−
11 GNDA
10 VDDA
9 GNDX
8 XI
7 XO
6 VDDX
5 VDDA
4 GNDA
3 RO+
2 RO−
1 GNDA
LZ 18
WCK 19
RCK 20
DLI 21
DRI 22
M1 23
M2 24
RZ 25
26 MCK
27 GNDD
28 VDDA
INPUT INTERFACE CIRCUIT
INTERPOLATION FILTER
DIZER CIRCUIT
ΣΔ MODULATION CIRCUIT
ΣΔ MODULATION CIRCUIT
OUTPUT CIRCUIT
OSCILLATION
INTERPOLATION FILTER
DIZER CIRCUIT
ΣΔ MODULATION CIRCUIT
ΣΔ MODULATION CIRCUIT
OUTPUT CIRCUIT
L/R PARALLEL ZERO DETECTION CIRCUIT
TIMING GENELATOR

● Pin Function

No.	Pin name	I/O	Function
1	GNDA	–	GND terminal of D/A converter (RO−).
2	RO−	O	Data output for R ch.
3	RO+		
4	GNDA	–	GND terminal of D/A converter (RO+).
5	VDDA	–	Power supply input of D/A converter (RO+).
6	VDDX	–	Power supply input of Oscillator.
7	XO	O	Terminals for crystal oscillator. Generate system clock.
8	XI	I	
9	GNDX	–	GND terminal of Oscillator.
10	VDDA	–	Power supply input of D/A converter (LO−).
11	GNDA	–	GND terminal of D/A converter (LO−).
12	LO−	O	Data output for L ch.
13	LO+		
14	GNDA	–	GND terminal of D/A converter (LO+).

No.	Pin name	I/O	Function
15	VDDA	–	Power supply input of D/A converter (LO+).
16	VDD	–	Power supply input of logic circuit.
17	$\overline{\text{RESET}}$	I	Reset terminal. When "L", reset the $\Sigma\Delta$ circuit.
18	LZ	O	Digital-Zero output for L ch.
19	WCK	I	Word clock input
20	BCK	I	Bit clock input
21	DLI	I	Data input for L ch.
22	DRI	I	Data input for R ch.
23	M1	I	Mode select input 1.(*1)
24	M2	I	Mode select input 2.(*1)
25	RZ	O	Digital-Zero output for R ch.
26	MCK	O	System clock output
27	GNDD	–	GND terminal of logic circuit.
28	VDDA	–	Power supply input of D/A converter (RO−).

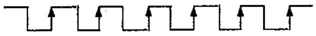
*1 : Selection of input data.

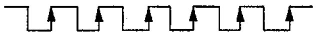
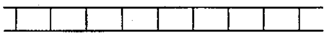
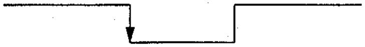
M1(23pin)	M2(24pin)	MCK(26pin) output	OSR	Input bit rate	Applicable digital filter
0	0	384fs	384fs	20	NPC SM5803/13/40
0	1	256fs	512fs	20	NPC SM5803/13/40
1	0	256fs	256fs	20	NPC SM5803/13/40
1	1	384fs	384fs	18	SONY CXD1244/2550

PD3179B

Microcomputer

• Pin Function

No.	Symbol	Pin name	I/O	Reset	Function
1	V_{SS}	–	–	–	GND
2	XTAL	–	–	–	Internal clock circuit input.
3	EXTAL	–	–	–	Internal clock circuit input.
4	MP0	–	I	–	+5V
5	MP1	–	I	–	+5V
6	$\overline{\text{RES}}$	–	I	–	Reset input for CPU RESET RUN
7	$\overline{\text{STBY}}$	–	I	–	Standby input for CPU STANDBY RUN
8	$\overline{\text{NMI}}$	SCOR	I	–	Sub code sync input SYNC
9	P20	FOK	I	–	Focus OK NG OK
10	P21	$\overline{\text{XLT}}$	O	H	LSI data execute control pulse EXEC
11	SCLK	CLK	O	H	Serial transmit clock 
12	Rx	SUBQ	I	–	Sub code Q data input
13	Tx	DATA	O	H	Serial data output 0 1 2 3 4 5 6 7
14	P25	SENS	I	–	LSI running state. Multi mode input
15	P26	MUTE	O	H	Muting out (Digital block) OFF ON
16	P27	GFS	I	–	Frame sync lock NG LOCK
17	P50	$\overline{\text{LDON}}$	O	H	Laser diode On/Off ON OFF
18	P51	$\overline{\text{DEMP}}$	O	H	De-emphasis On/Off ON OFF
19	P52	$\overline{\text{TEST}}$	I	–	Test mode select input TEST NORMAL
20	P53	TMSW	I	–	Timer play switch YES NO
21	P54	AMUTE	O	H	Muting out (Analog block) OFF ON
22	P55	MDSW	I	–	Model select switch With FADE No FADE
23	P56	SYC1	I	–	Deck-Synchro input port(Pulled-up when not used)
24	P57	SYC3	O	L	Deck-Synchro output port(Open when not used)
25	P60	Not used	I	–	GND
26	P61	LIN	O	L	Disc tray loading IN/OUT output Free Brake IN
27	P62	LOUT	O	L	OUT
28	P63	$\overline{\text{LOAD}}$	I	–	Loading complete LOAD-IN NOT
29	P64	$\overline{\text{CLOP}}$	I	–	Clamp up complete CLAMP-UP NOT
30	P65	$\overline{\text{OPEN}}$	I	–	Open complete OPEN NOT
31	P66	$\overline{\text{CLMP}}$	I	–	Clamp complete CLAMP NOT
32	P67	Not used	O	L	(OPEN)

No.	Symbol	Pin name	I/O	Reset	Function
33	Vcc	–	–	–	+5V
34	P47	Not used	O	L	(Open)
35	P46	Not used	O	L	(Open)
36	P45	Not used	O	L	(Open)
37	P44	KS	I	–	Key strobe input from front panel ON OFF
38	P43	RKS	I	–	Key strobe input from remote controller ON OFF
39	P42	CLUP	O	L	Disc clamp Up/Down output Free Brake UP Down
40	P41	CLDW	O	L	
41	P40	STS	I	–	Input for display data transmit enable ENABLE DISABLE
42	Vss	–	–	–	GND
43	P17	Not used	O	L	(Open)
44	P16	Not used	O	L	(Open)
45	P15	FLOF	O	H	FL display on/off ON OFF
46	P14	DOFF	O	H	Digital output status ON OFF
47	P13	AOFF	O	H	Analog output status ON OFF
48	P12	SCK	O	H	Serial transmit clock for display data 
49	P11	SD	O	H	Serial display data output 
50	P10	SRES	O	L	Reset output for key display microcomputer RESET RUN
51	P37	KD7	I	–	Key code input from front panel and remote controller (MSB)
52	P36	KD6	I	–	
53	P35	KD5	I	–	
54	P34	KD4	I	–	
55	P33	KD3	I	–	
56	P32	KD2	I	–	
57	P31	KD1	I	–	
58	P30	KD0	I	–	Key code input from front panel and remote controller (LSB)
59	P74	Not used	O	L	(Open)
60	P73	Not used	O	L	(Open)
* 61	P72	DLAT	O	H	ATT level data latch pulse *1 
62	P71	DDAT	O	H	ATT level data serial output *1 0 1 2 3 4 5 6 7
63	P70	DCLK	O	H	ATT level data serial transmit clock *1 Continuous 8 pulses output.
64	E	–	O	–	(Open)

*1 : Pins 61 to 63 are connected to digital filter IC(SM5840) when it is used.

8. FOR HEM AND SD TYPES

• CONTRAST OF MISCELLANEOUS PARTS

NOTES :

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

The PD-75/HEM and SD types are the same as the PD-75/KU/CA type with the exception of the following sections.

Mark	Symbol & Description	Part No.			Remarks
		KU/CA	HEM	SD	
⚠◉	MAIN BOARD assembly	PWZ1983	PWZ1994	PWZ1994	
⚠	PRIMARY BOARD assembly	Non supply	Non supply	Non supply	
	BALANCE BOARD assembly	Non supply	....	....	
◉	FUNCTION A BOARD assembly	PWZ2000	PWZ1998	PWZ1998	
⚠	AC power cord	PDG1015	PDG1003	PDG1013	
⚠	Voltage selector	....	....	PSB1002	
⚠	Power transformer(17VA)	PTT1162	PTT1163	PTT1164	
⚠	Power transformer(8VA)	PTT1166	PTT1167	PTT1168	
⚠	Strain relief	CM-22C	CM-22B	CM-22B	
	25P F.F.C/30V	PDD1096	....	....	
	23P F.F.C/30V	....	PDD1069	PDD1069	
	3P receptacle	PKP1004	....	....	
	Balance case	PNS1019	....	....	
	Balance cover	PAT1004	....	....	
	Bonnet	PEA1168	PYY1071	PYY1071	
	CD packing case	PHG1676	PHG1671	PHG1671	For Packing
	Cord with plug(mini plug)	PDE-319	....	....	
	FL sheet	PAM1290	PAM1251	PAM1290	
	Front panel assembly	PEA1177	PEA1178	PEA1178	
	Spacer	PNM1136	....	....	
	UL Caution	PRW1250	....	....	
	Operating instructions (German/Italian/Dutch/Swedish /Spanish/Portuguese)	....	PRF1048	....	

MAIN BOARD ASSEMBLY(PWZ1994)

The MAIN BOARD assembly (PWZ1994) is the same as the MAIN BOARD assembly (PWZ1983) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PWZ1983	PWZ1994	
	D701-D704	1SS254	…………	
	C701	CKCYF103Z50	…………	
	C702	CCCSL101J50	…………	
	R701	RD1/6PM244J	…………	
	R702	RD1/6PM102J	…………	
	CN6	HLEM25R	HLEM23R	
	JA701, JA702	RKN1004	…………	

PRIMARY BOARD ASSEMBLY

The PRIMARY BOARD assemblies of PD-75/HEM and SD are the same as the PRIMARY BOARD assembly of PD-75/KU/CA with the exception of the following sections.

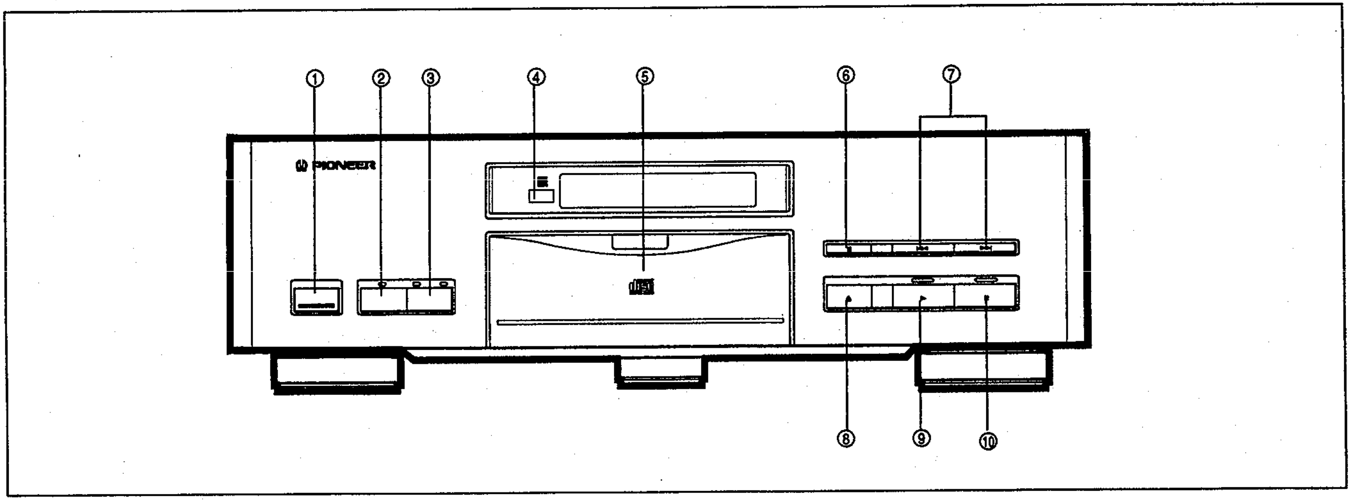
Mark	Symbol & Description	Part No.		Remarks
		KU/CA	HEM and SD	
	Capacitor sleeve	…………	REC-297	

FUNCTION A BOARD ASSEMBLY(PWZ1998)

The FUNCTION A BOARD assembly (PWZ1998) is the same as the FUNCTION A BOARD assembly (PWZ2000) with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		PWZ2000	PWZ1998	
	R418, R420	RD1/6PM471J	RD1/6PM331J	
	R419	RD1/6PM391J	RD1/6PM331J	
	CN401	HLEM25R	HLEM23R	

9. PANEL FACILITIES



FRONT PANEL

① **POWER switch**

② **DISPLAY button and OFF indicator**

③ **OUTPUT button and DIGITAL/ANALOG indicators**

④ **Remote sensor**
Receives the signal from the remote control unit.

⑤ **Disc tray**

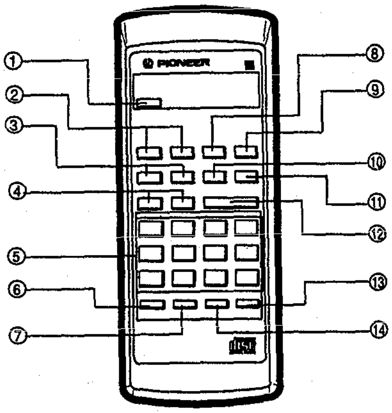
⑥ **STOP button (■)**

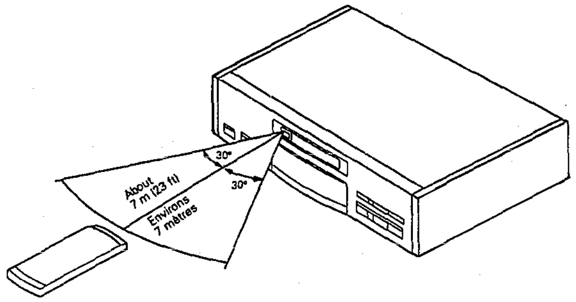
⑦ **TRACK search buttons (⏮/⏭)**

⑧ **OPEN/CLOSE button (⏏)**

⑨ **PLAY button (▶) and indicator**

⑩ **PAUSE button (⏸) and indicator**





REMOTE CONTROL UNIT

Remote control buttons with the same names or marks as buttons on the front panel of the player control the same operations as the corresponding front panel buttons.

① OPEN/CLOSE button (⏏)
② INDEX buttons (← / →)
③ MANUAL search buttons (◀◀ / ▶▶)
④ TRACK search buttons (|◀◀ / ▶▶|)
⑤ Track number/Digit buttons (1-10, +10, ≧ 20)
⑥ PGM (Program) button
⑦ CHECK button
⑧ REPEAT button
⑨ RANDOM PLAY button
⑩ PAUSE button (❚❚)
⑪ STOP button (■)
⑫ PLAY button (▶)
⑬ TIME button
⑭ CLEAR button

REMOTE CONTROL OPERATIONS

When operating the remote control unit, point the unit's infrared signal transmitter at the remote control receiver (REMOTE SENSOR) on the front panel of the player. The remote control unit can be used within a range of about 7 meters (23 feet) from the remote sensor, and within angles of up to about 30 degrees.

NOTE:

If the remote control sensor window is in a position where it receives strong light such as sunlight or fluorescent light, control may not be possible.

10. SPECIFICATIONS

1. General

Type	Compact disc digital audio system
Power requirements	
European model	AC 220 - 230 V, 50/60 Hz
U.K. and Australian models	AC 230 - 240 V, 60 Hz
U.S. and Canadian models	AC 120 V, 60Hz
Other models	AC 110/120 - 127/220/240 V (Switchable), 50/60 Hz
Power consumption	30 W
Operating temperature	+5°C - +35°C +41°F - +95°F
Weight	12.0 kg (26 lb, 7 oz)
External dimensions	459(W) X 330(D) X 130(H) mm 18-1/16(W) X 13(D) X 5-2/16(H) in
U.S. and Canadian models	459(W) X 360(D) X 130(H) mm 18-1/16(W) X 14-3/16(D) X 5-2/16(H) in

2. Audio section

Frequency response	2 Hz - 20 kHz
S/N ratio	112 dB or more (EIAJ)
Dynamic range	98 dB or more (EIAJ)
Channel separation	108 dB or more (EIAJ)
Harmonic distortion	0.0018% or less (EIAJ)
Output voltage	2.0V
Wow and flutter	Limit of measurement (±0.001% W.PEAK) or less (EIAJ)
Channels	2-channel (stereo)
Balanced type audio line out (U.S. and Canadian models)	2V (600 Ω)

3. Output terminal

Unbalanced type audio line output jacks
Balanced type audio line output jacks (U.S. and Canadian models only)
Optical and coaxial digital output jacks
Control input/output jacks (U.S. and Canadian models only)
CD-DECK SYNCHRO jack

4. Functions

Basic operation buttons
- PLAY, PAUSE, STOP

Search function
- Direct play
- Track search
- Manual search
- Index search
- Time location

Programming
- Maximum 24 steps
- Pause
- Program check/correction
- Program clear (single track or all tracks)

Repeat functions
- 1 track repeat
- All tracks repeat
- Program play repeat
- Random play repeat
- Program random play repeat

Random play (repeat also available)

Switching display
Time consumed, remaining time (track/disc), and total time

Timer start

5. Accessories

Remote control unit	1
Size AAA/R03/dry batteries	2
Turntable sheet	1
Control cord (U.S. and Canadian models only)	1
Output cable	1
Operating instructions	1

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.